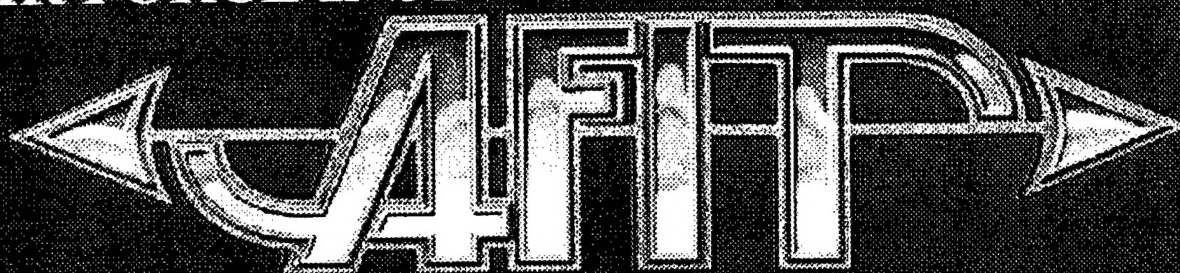




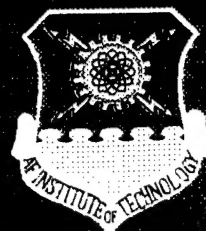
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AIR FORCE INSTITUTE OF TECHNOLOGY



**GRADUATE SCHOOL OF ENGINEERING
&
GRADUATE SCHOOL OF
LOGISTICS & ACQUISITION MANAGEMENT
RESEARCH REPORT 1999**

Period of Report: 1 October 1998 to 30 September 1999



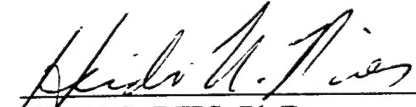
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Wright-Patterson Air Force Base, Ohio

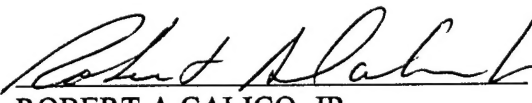
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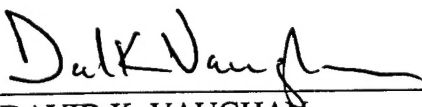
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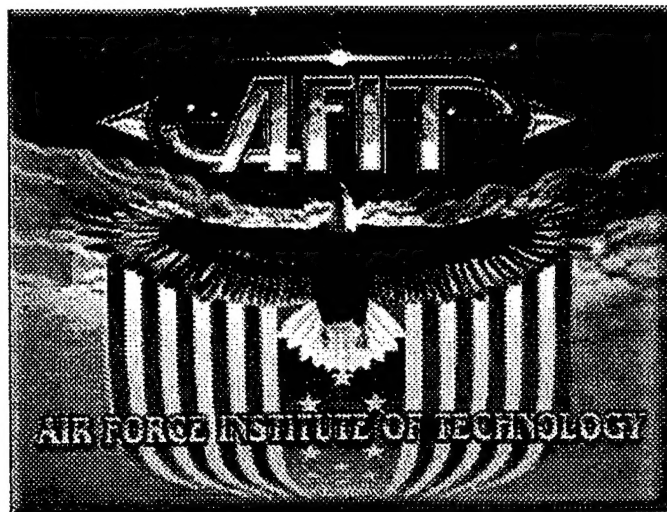

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Graduate School of Logistics &
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FOREWORD

The mission of the Air Force Institute of Technology (AFIT) graduate programs, to support national security through education, research, and consultation, continues to be intrinsically interwoven into the Air Force mission. AFIT maintains a close affiliation with Air Force research organizations and operational communities as well as Department of Defense Agencies. This affiliation enables AFIT to provide a unique environment for research essential to the training of future managers and engineers in disciplines critical to anticipated defense needs.

This Research Report is prepared annually by the Office of Research and Consulting to solicit continued involvement and support from Air Force laboratories and DoD agencies, and to encourage new sponsors to participate in AFIT's research program. AFIT recognizes that research provides a dual opportunity, to enhance military competitiveness and to ensure timely transfer of new technology to US industry.

The FY 1999 report reflects the final year of operation as two separate graduate schools, the Graduate School of Engineering and the Graduate School of Logistics and Acquisition Management. Effective October 1, 1999 the two resident graduate schools were merged to form the Graduate School of Engineering and Management. The educational and research programs from both schools are continuing to flourish under the new organizational structure.

GEORGE K. HARITOS, Colonel, USAF
Commandant
Air Force Institute of Technology



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AIR FORCE INSTITUTE OF TECHNOLOGY

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AFIT HISTORY

The Institute

AFIT traces its roots to the early days of powered flight when it was apparent that the progress of military aviation depended upon special education in this new science. In 1919, the Air School of Application was established at McCook Field in Dayton, Ohio, the home of Orville and Wilbur Wright.

When Congress authorized creation of the Air Corps in 1926, the school was renamed the Air Corps Engineering School and moved to Wright Field in 1927. Shortly after Pearl Harbor, the school suspended classes, but it reopened as the Army Air Forces Engineering School in 1944 to conduct a series of accelerated courses to meet emergency requirements.

After World War II, 1946, the Army Air Force Institute of Technology was established as part of the Air Materiel Command. The Institute was composed of two colleges: Engineering and Maintenance, and Logistics and Procurement. These colleges were later redesignated the College of Engineering Sciences and the College of Industrial Administration.

When the Air Force became a separate service in 1947, the Institute was renamed the Air Force Institute of Technology. That same year, the School of Civil Engineering Special Staff Officer's Course began. In 1948 civilian institution programs were transferred to AFIT.

In 1950, command jurisdiction of AFIT shifted from Air Materiel Command to Air University (AU) with headquarters at Maxwell AFB, Alabama. The Institute, however, remained at what was now known as Wright-Patterson AFB. In 1951, the two AFIT colleges were combined into the Resident College.

The Institute established a logistics education program at WPAFB in 1955, and The Ohio State University conducted the first courses on a contract basis. In 1958, AFIT began a series of short courses in logistics as part of the Air Force Logistics Command (AFLC) Education Center. Later that year, the School of Logistics became a permanent part of AFIT.

In 1954, the 83d Congress authorized the Commander, Air University, to confer degrees upon persons in the AFIT Resident College. The college was later divided into the School of Engineering, the School of Logistics, and the School of Business. The first undergraduate engineering degrees were granted in 1956, and the first graduate degrees in business in 1958. The School of Business programs were transferred to civilian universities in 1960. In 1963, the School of Logistics was redesignated the School of Systems and Logistics. The Civil Engineering Center was also redesignated as the Civil Engineering School.

In 1967, AFIT became a member of the Dayton Miami Valley Consortium (DMVC), which later changed its name to Southwestern Ohio Council for Higher Education (SOCHE). The council is an association of colleges, universities, and industrial organizations in the Dayton area which are united to promote educational advancement. AFIT has traditionally been active in both the council and in other community and interinstitutional programs.

AFIT's flexibility is such that it adjusts quickly to changing Air Force requirements. The faculty, comprised of highly qualified military and civilian personnel, stay abreast of projected Air Force

operations, and the programs are continually updated to offer its students the latest available material. For example, an Air Force Software Review in 1989 led to AFIT programs in software engineering and software systems management barely a year later. When environmental concerns culminated in the Pollution Prevention Act of 1990, AFIT designed and implemented both graduate and professional continuing education programs in environmental engineering management. In 1994, Air Force Weather requested a meteorology program designed specifically for the warfighter, and in less than one year AFIT delivered a graduate education program in military meteorology with an initial enrollment of fourteen officers.

In 1995, AFIT's Graduate School of Engineering became a member of the Dayton Area Graduate Studies Institute (DAGSI) along with the graduate engineering schools of Wright State University and the University of Dayton. The purpose of the partnership was to provide, through the combined engineering and research resources of the three schools, educational and research opportunities at the MS and PhD level. The University of Cincinnati and the Ohio State University became affiliate members of DAGSI in 1997. DAGSI provides a continuing source of advanced technological expertise for the region covered by the five schools. The DAGSI program covers a broad spectrum of over 30 major research areas and benefits from the support of business and industry, government, and civic sectors of the Dayton Region.

Early in Fiscal Year 97, the Secretary of the Air Force made a decision to close AFIT resident graduate schools. In anticipation of closure, AFIT developed and began a transition and closure plan. Resident Ph.D. students scheduled for FY 97 were diverted to the Civilian Institution Program and a transition plan for actual closure was developed, identifying manpower positions for elimination in FYs 97 through 00.

In April 1998, after a visit to AFIT, the Acting Secretary of the Air Force, F. Whitten Peters, announced a reversal of the Air Force decision to terminate the AFIT resident graduate programs. AFIT will continue a restructuring initiative begun in FY 96 that will size the resident graduate programs to meet the Air Force education requirements of the FY 03 force structure. As part of this restructuring, the two resident graduate schools were merged into The Graduate School of Engineering and Management on Oct 1, 1999.

Research

Creative, relevant research programs are essential to both graduate education and the continuous modernization of military capability. Consequently, research has been an important element of the educational enterprise throughout AFIT's history, often in collaboration with scientists of the Air Force Research Laboratories co-located at Wright-Patterson Air Force Base. The implementation of the PhD program at AFIT in 1965 resulted in significant growth of the research activities on the AFIT campus. The expanded role of sponsored research at AFIT was recognized by creating the Office of Research for the School of Engineering in 1989 and the Office of Research and Consulting for the School of Logistics and Acquisition Management in 1990 (now the Office of Research and Consulting in the Graduate School of Engineering and Management).

Several key projects are illustrative of AFIT's research impact on the Air Force, the Department of Defense, and the nation. For more than twenty years, the Department of Engineering Physics has conducted strong research in high energy laser technology and delivered mission ready graduates to AF laboratories. Two PhD graduates served as directors of the Air Force laser

program, and four PhD graduates led the team demonstrating a 40 kW laser for anti-satellite missions. The AFIT laser weapons research group is now supporting the development of the Airborne Laser, based on the Chemical Oxygen Iodine Laser co-invented by an AFIT graduate. Other work of the laser weapons research group includes the development of lasers for remote sensing and counter-proliferation applications, new optical diagnostic methods, and studies of ionization mechanisms in the thermosphere for satellite survivability.

In support of the Air Force's and DoD's environmental restoration programs, AFIT established a remediation research program in the early 1990s involving faculty from four departments. Since that time, over 50 student theses on the subject have been published and graduates have gone on to manage remediation programs at bases and major commands throughout the Air Force. Research contributions include a field demonstration of a bioremediation technology that destroys trichloroethylene, the most common groundwater contaminant at DoD installations, and some of the first studies of the biodegradability of tolyltriazole, an aircraft deicing fluid additive recently recognized as an important groundwater contaminant at airfields throughout the nation.

AFIT researchers in the Department of Operational Science, responding to the needs of the C-17 Systems Program Office (SPO), developed an object-oriented simulation model to quantify the rate of paratrooper/vortex interaction for various airdrop formations, enhanced through high-resolution computer visualization of model results. The research results were briefed to the C-17 SPO Director, the Director of Test and Evaluation for the Office of the Secretary of Defense, the Undersecretary of the Army for Operations Research, and the Commander of the XVIII Airborne Corps. Utilizing their C-17 airdrop simulation model, the AFIT researchers also led a preflight study of the multinational CENTRAZBAT '97 Exercise; their analysis was praised by the XVIII Airborne Corps Commander as "dead-on!"

The Department of Aeronautics and Astronautics has an ongoing research program studying high cycle fatigue, the cause of the most dominant issue relevant to gas turbine engine damage. Currently, there exists only a cursory understanding of damage, crack initiation, and crack propagation under high cycle fatigue conditions. It has been recognized that a significant number of failures of engine components are attributable to fretting damage, such as dove-tailed blades, including press-fit or interlocking connections which are subjected to surface wear and fretting fatigue. The study in collaboration with the Materials and Manufacturing Directorate of the Air Force Research Laboratory uses an integrated experimental/analytical numerical modeling approach to investigate the high cycle fretting fatigue behavior of titanium alloys.

In December 1998, AFIT broke ground for a \$8.9 million engineering laboratory. The facility will be used for experimental research in aeronautical engineering, electrical engineering, applied physics and environmental science. The lab is scheduled for completion in the summer of 2000, and will enable AFIT to continue its tradition of high quality research programs in support of the Air Force mission.

SECTION 1

INTRODUCTION

Research, inextricably integrated with graduate education, requires support to sustain and develop new knowledge. Defense research has dual benefits, enhanced military operational capabilities and commercial application in the development of new products and processes. This report describes the broad technical spectrum of AFIT research interests and faculty expertise; the involvement of research sponsors; and the procedure for developing opportunities for participation in AFIT research activities. This report highlights and summarizes the FY 99 contributions of the Graduate School of Engineering (EN) and the Graduate School of Logistics and Acquisition Management (LA) to the Air Force mission. The October 1, 1999 merger of the two schools into the Graduate School of Engineering and Management will be reflected in the FY 00 report.

The Graduate School of Engineering consisted of six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Engineering and Environmental Management (ENV), and the Department of Aeronautics and Astronautics (ENY). The Graduate School of Logistics and Acquisition Management consisted of the Dean's Office (LA), the Department of Graduate Logistics Management (LAL), and the Department of Graduate Acquisition Management (LAS).

AFIT welcomes the opportunity to conduct research on topics of interest to the Air Force and other DoD organizations. Thesis/dissertation topics may be sent directly to the appropriate departments or to the Office of Research and Consulting. The Air Force, the DoD, and other government agencies are not the exclusive benefactors of faculty expertise, consultation, and the research technology developed at AFIT. Consultation and technology can be made available to the public for immediate commercial application and industrial problem solving. Technology transfer, through Cooperative Research and Development Agreements, gives direct access to the expertise to help solve problems and give advice. The cost of participation in technology transfer depends on the extent or resources used for any particular commercial/industrial client or educational institution. There may be no cost involved or prolonged use of equipment or faculty and students may be billed at cost.

Office of Research and Consulting Graduate School of Engineering and Management

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Research Grants Engineer
(937) 255-3636, ext 4546 (DSN: 785-3636, ext 4546)
e-mail Gary.Koenig@afit.af.mil

SECTION 2

EXECUTIVE SUMMARY

2.1 RESEARCH AND CONSULTING OUTPUT MEASURES

Technology sharing and transfer are critical to the timely development of new operational capabilities. There are measurable indicators of AFIT's contribution to the engineering and scientific community and AFIT's success in staying well informed of technical possibilities and scientific opportunities. These include the number and quality of technical publications accepted by the editors of journals, the number of presentations accepted for regional, national and international conferences, the number of research projects conducted, the number of consultations performed for Air Force and DoD customers, and finally the number of student MS theses and PhD dissertations that are completed and submitted to the Defense Technical Information Center. For fiscal year 1999, these output measures are shown in Table 2.1 and in Fig. 2.1.

Table 2.1: Graduate School's Faculty Research and Consulting Output

Graduate School Department	Number of Faculty	Refereed Publications	Other Publications	Presentations	Funded Research Projects	Significant Consultations	Masters Theses Advised	Doctoral Disserts. Advised
Engineering								
Math (ENC)	10	5	3	12	3	1	5	2
Elec (ENG)	24	15	61	44	43	27	65	7
Phys (ENP)	18	10	6	28	14	6	33	4
Op Sc (ENS)	14	18	17	82	51	10	29	2
Envir (ENV)	8	10	3	10	6	2	15	0
Aero (ENY)	19	13	25	19	13	7	22	1
Total (EN)	93	71	115	195	130	53	169	16
Logistics and Acquisition Management								
Deans (LA)	3	2	8	12	0	1	2	0
Log (LAL)	12	8	2	8	0	1	19	0
Acq Mgt (LAS)	7	3	2	0	0	2	9	0
Total (LA)	22	13	12	20	0	4	30	0
Total EN+LA	115	84	127	215	130	57	199	16

2.2 RESEARCH AND CONSULTING SPONSORSHIP

As members of an Air Force School, the faculty of the AFIT focus their research on current problems as well as future systems of the Air Force and other DoD organizations. Evidence of this focus is that Air Force, DoD and Government agencies externally sponsored 85% of all theses and dissertations listed in Table 2.2. In addition, most of the research projects and consultations were carried out for Air Force and DoD units. The data are summarized in Table 2.2 and Fig. 2.2.

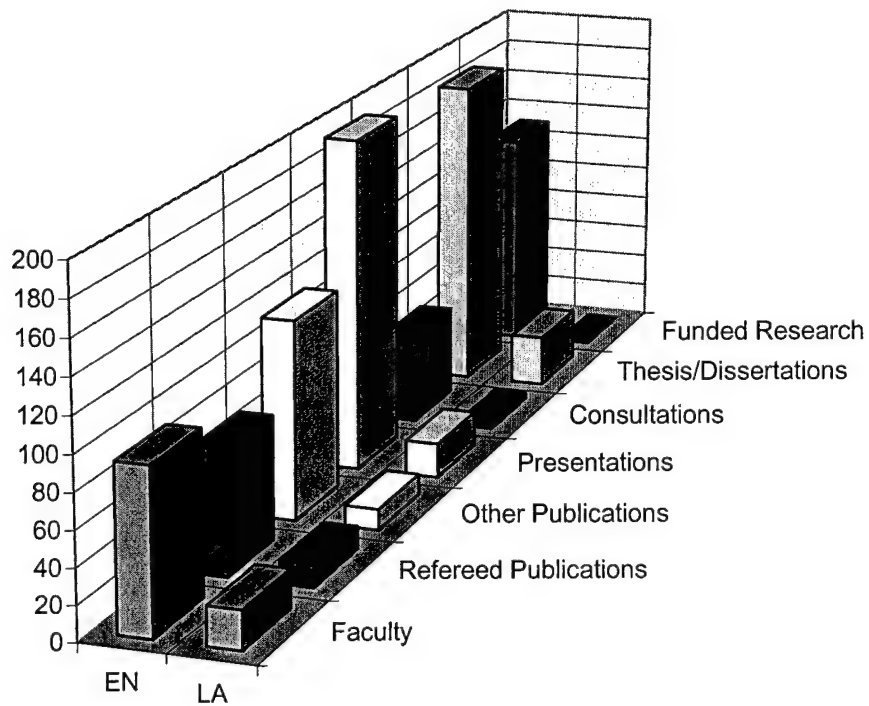


Figure 2.1: Research Output Measures, AFIT Resident Graduate Schools

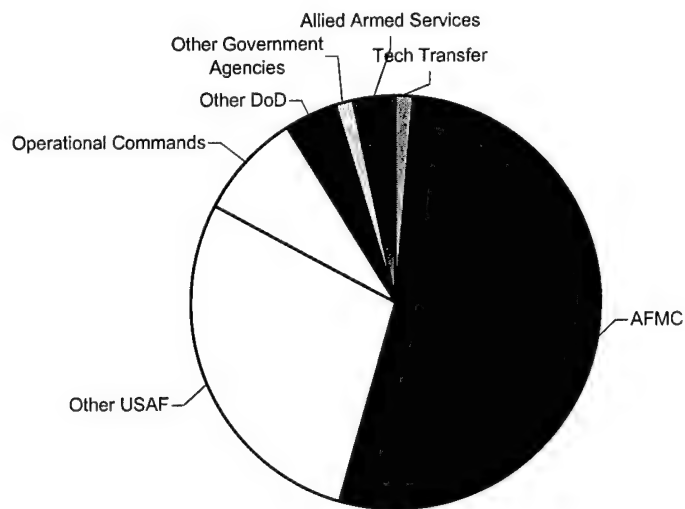


Figure 2.2: Sponsors of AFIT Resident Graduate Schools' Theses and Dissertations

Table 2.2: Sponsorship of AFIT Graduate Schools' Research

Sponsor Organization	Master's Theses (LA)	Masters' Theses (EN)	PhD Dissertation (EN)	Funded Research (EN)	Significant Consultations (LA)	Significant Consultations (EN)
Aeronautical Systems Center	1	9		2		5
AFOSR		7	1	49		
AFRL	5	72	10	24		25
Air Logistics Centers			1			
Space and Missile Center		3		2		
Other AFMC	1	4			1	1
Air Combat Command (ACC)	2	3				1
AEF Battlelab		1				
Cmd & Cntrl Battlelab		1				
UAV Battlelab		3				
AETC						
AFIT	8	14				
Air Force	5	10		8	2	9
AFOTEC		3	1			
AFPOA		1				
AF Space Command		1				
Space Battlelab		2				
Space Warfare Center		1				
AFTAC		5		1		
AF Weather Agency		1				
45 th Weather Squadron		6				
Air Intelligence Agency		3				
Air Mobility Command	4	3	1			1
Allied Armed Services	4					
Army				2		1
US Army ERDEC		1				
Recruiting Command		1				
Safety Center		1				
Atlantic Command						
Joint CCWC		1				
Australian Dept of Defense		1				
Brazilian AF		1				
Canadian Forces		1				
Dept of Defense		4	1	10	1	
INSS		2				
NASA		1				
Other				1		6
Technology Transfer		2	1	11		4
TOTALS:	30	169	16	110	4	53

2.3 OUTSIDE FUNDING OF THE SCHOOL OF ENGINEERING'S RESEARCH

Many of the School of Engineering's theses and research projects completed under faculty supervision (sponsored or unsponsored) are funded in part by other Air Force, DoD and government units and agencies. Often this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Table 2.3 and Fig. 2.3 summarize outside funding for FY 1999.

Table 2.3: Sponsoring Organizations for Funded Research

Sponsoring Organization	Dollars (\$)
Air Force Research Lab (AFRL)	768,756
AFOSR	1,509,730
Other AFMC	55,772
Other USAF	188,650
Other DOD	385,062
DOE	52,257
Tech Transfer (CRDAs)	143,772
Total	3,103,999

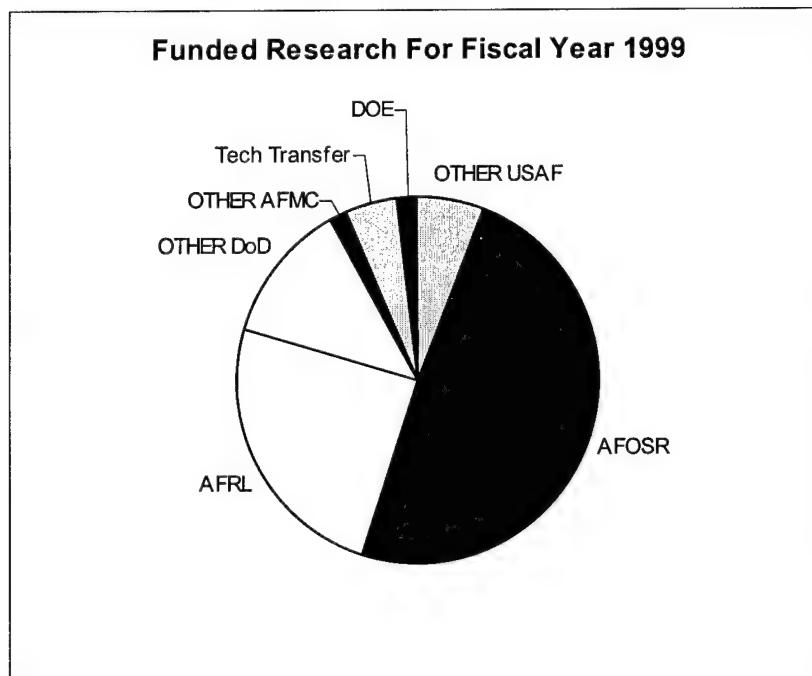


Figure 2.3: Funded Research for Fiscal Year 1999

2.4 RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Form was sent to each sponsor (See sample on the following page) of a master's thesis and doctoral dissertation project during FY 1999 to determine the projects contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 2.4. The data in this table are based on seventy-seven (77) questionnaires returned out of the one hundred eighty-five (185) questionnaires mailed.

Table 2.4: Assessment of AFIT Graduate Schools Research

QUESTION	EN
Did this research contribute to a current Air Force/DoD project?	94%
The thesis work was: Highly significant Significant Slightly significant Not significant	40% 47% 9% 3%
Avg. Man-years of effort saved	1.2
Average cost avoided per thesis/dissertation	\$140,462
Total cost avoided for all theses and dissertations sponsored (extrapolated from returned questionnaires)	\$25,985,615
Rank of respondents Colonel (GM-15) Lt Col (GM-14) Major (GM-13) Captain (GS-12) Other	6% 24% 40% 16% 14%



RESEARCH ASSESSMENT QUESTIONNAIRE

TO:

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author:

Designator:

Faculty Advisor:

Please help us determine the value and contribution of this research to your organization's mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization? Y / N
2. Would you have completed this work if AFIT had not done it? Y / N
3. Regardless of your answers above, how would you rate this work?

Highly significant
Significant
Slightly significant
No significance

4. If AFIT had not done this work, please estimate what it would have cost your organization to perform it, either by using in-house resources or by contract. *Man-Years _____ \$ _____

**Please note that typically an MS thesis requires 0.5MY of the student's time and one month of the faculty advisor's time. For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.*

5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side)

You may mail this to AFIT/ENR, 2950 P Street, Wright-Patterson AFB OH 45433-7765, or fax it to (937) 656-7302 (DSN 986-7302), or just e-mail your answers (only) to 1 to 5 to enr@afit.af.mil. If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

Name of Evaluator

Office Symbol

Grade/Rank of Evaluator

2000 CALL FOR MS THESIS TOPICS

AFIT sends out an annual call for theses in an effort to involve sponsor organizations actively in research and education. Interested organizations may review the material presented in this report and contact AFIT with questions and areas of interest.

The Department of Electrical and Computer Engineering invites M.S. thesis suggestions and topics for the Computer Science and Computer Engineering programs. The areas covered by these programs include:

Artificial Intelligence	Information Visualization
Computer Communications Networks	Numerical Analysis
Database Systems	Software Engineering
High Performance Computing	VLSI/VHSIC Systems
Information Systems Security and Assurance	

The Department of Electrical and Computer Engineering invites M.S. theses suggestions and topics for the Electrical Engineering and Electro-Optics programs. The areas covered by these programs include:

Analog & Digital Communications	Computational Electronics
Satellite Communications	Micro-Electro-Mechanical Systems (MEMS)
Signal Processing	Micro- & Opto-Electronic Materials & Devices
Computational Electromagnetics	Photonic Devices & Systems
Radar, Electronic Combat	Very Large Scale Integrated (VLSI) Circuits
Low Observables (stealth)	VLSI/VHSIC Systems
Integrated Navigation Systems	Radiation Hardened & Space Electronics
Global Positioning System (GPS)	Statistical Optics
Flight Control Systems	Optical Information Processing
Automatic Target Recognition	Pattern Recognition

The Department of Engineering Physics invites M.S. theses suggestions and topics for the Engineering Physics, Nuclear Engineering and Electro-Optics programs. (Electro-Optics shared between Electrical Engineering and Engineering Physics) The areas covered by these programs include:

Lasers & Nonlinear Optics	Atmospheric and Space Optics
Nuclear Weapons Effects	Optical Systems, Imaging & Remote Sensing
Nuclear Proliferation and Their Effects	Space Nuclear Power and Propulsion
Electronic & Photonic Materials and Devices	
Environmental Remediation Fission/Fusion Material	

The Department of Operational Sciences invites M.S. theses suggestions and topics for the Operations Research, and Operational Analysis programs. Areas covered by these programs include:

- Operations Research**
- Risk Assessment and Analysis**
- Quantitative and Qualitative Approaches to Space Operations**
- Quantitative and Qualitative Approaches to Operational Analysis**
- Planning, Deployment and Employment**
- Transportation**
- Wargaming**

The Department of Systems and Engineering Management invites M.S. thesis suggestions and topics. Areas covered include:

Engineering Management	Professional Development and Retention
Environmental Policy and Planning	Environmental Compliance and Remediation
Environmental Risk Analysis	Contract and Program Management
Air Quality and Air Resource Mgmt	Management Decision Analysis
Outsourcing and Privatization	Risk Communication
Ecosystem Management Strategies	Contingency Engineering Management
Pollution Prevention & Econ Analysis	Facilities Engineering and Management
Groundwater Hydrology and Contaminant Transport	

The Department of Aeronautics and Astronautics invites M.S. theses suggestions and topics. Areas covered by these programs include:

Aerodynamics of Flight Vehicles	Numerical Analysis & Computer
Analysis of Aerospace Structures	Simulation
Theory and Applications of	Computational Fluid Dynamics
Composite Materials	Reliability and Maintainability
Dynamics & Control of Flight Vehicles	Systems Engineering Design Studies
Propulsion Systems for Flight Vehicles	

The Graduate School of Engineering and Management invites M.S. thesis suggestions and topics for the Logistics and Acquisition Management Programs. The areas covered by these programs include:

Acquisition Logistics Management	Logistics Management
Information Resource Management	Inventory Management
Transportation Logistics Management	

If you have any questions about engineering programs, please contact the Office of the Associate Dean for Research and Consulting, AFIT/ENR, 2950 P Street, Wright-Patterson AFB OH, 45433-7765 (email enrsta@afit.af.mil), (937) 255-3633, DSN 785-3633.

ESTABLISHING YOUR THESIS TOPIC IDEA EFFICIENTLY

1. Look through the credentials and interests of the AFIT faculty members in this book who support the programs listed above. Cross-reference with the Areas of Professional Expertise (section 3.2). Match your areas of interest with the research interests and applications of one or more faculty.

2. Read through the list of selected recent graduates' thesis topics. You may find one or more AFIT Faculty Advisors who have dealt with a topic in your interest area.

3. *All of the above information is under AFIT's home page on the internet. Please enter <http://www.afit.af.mil/> then select 'Research'.*

4. ***This is essential:*** Whether you work from this booklet or from the internet, contact a faculty member to discuss your idea for a thesis topic. A topic that has strong faculty endorsement and support is much more likely to be chosen by the students than one that lacks faculty advocacy. Topics that fall outside the collective areas of faculty competence cannot be approved, even if chosen. For maximum effectiveness all around, ***please talk to AFIT faculty before you submit a thesis suggestion.***

5. When calling, use the faculty member's DSN phone number to make direct contact. For commercial calling, replace the DSN number 785-xxxx, ext xxxx with (937) 255-xxxx, ext xxxx.

6. After talking to an AFIT faculty member, prepare and send your proposal as soon as possible. Use the sample proposal format in this book, or make up your own. **Send your proposal to the faculty member, to the department, or to AFIT/ENR, 2950 P St., Wright-Patterson AFB OH 45433-7765.**

Sample Thesis Topic Proposal

Use this format to write up your proposal, or develop your own. Send your proposal to the faculty member, appropriate department, or AFIT/ENR, Bldg 640, 2950 P St, Wright-Patterson AFB OH 45433-7765.

***** S A M P L E *****
PROPOSED THESIS TOPIC

1. **THESIS TOPIC:** Object-Oriented, Parallel, Discrete-Event Simulation Environment

2. **INDIVIDUAL SPONSOR:** Capt Lienert, RL/IRAA (DSN 785-3708)
Aeronautical Systems Center
5125 C St
Wright-Patterson AFB OH 45433-0098

3. **AFIT FACULTY CONTACTED:** Dr Thomas C. Harttrum, AFIT/ENG

4. **BACKGROUND/PROBLEM:** In order to investigate various approaches to speeding up the execution of battlefield simulations using parallel processors, there is a need to develop a simulation environment to allow for easy changes in application simulations, as well as parallel simulation protocols. The environment is to be written in Ada. An object-oriented simulation environment would provide AFIT students and faculty in the parallel simulation group the opportunity to write simulation programs without having to worry about low-level details of the machine interface. Such a simulation environment would need to support a distributed network of various parallel and sequential computers to support future simulation applications.

5. **OBJECTIVE/APPROACH:**

- a. Analyze what is needed in a simulation environment.
- b. Design the system, using objects defined in the analysis.
- c. Implement the environment in Ada.

6. **RESOURCE REQUIREMENTS:**

- a. Access to a parallel processor
- b. Compatible parallel Ada compiler
- c. Local area network

7. **REFERENCES:** Parallel Program Design, Chandy & Misra
***** S A M P L E *****

SECTION 3

GRADUATE SCHOOL OF ENGINEERING

3.0 OVERVIEW

AFIT supports the Air Force mission by providing uniquely defense-oriented education through high quality graduate instruction, research, and consultation.

The FY 99 Graduate School of Engineering consisted of six departments: Department of Aeronautical and Astronautical Engineering (ENY), Department of Electrical Engineering and Computer Engineering (ENG), Department of Mathematics and Statistics (ENC), Department of Engineering and Environmental Management (ENV), Department of Engineering Physics (ENP), and Department of Operational Sciences (ENS). All six departments were retained following the October 1, 1999 merger with the Graduate School of Logistics and Acquisition Management to form the Graduate School of Engineering and Management. However, ENV was renamed the Department of Systems and Engineering Management to reflect its expanded program responsibilities.

A total of 169 masters theses and 16 PhD dissertations addressing a wide range of Air Force and DoD critical issues were written in 1999. In addition, the faculty produced 71 refereed journal articles, 115 other publications, 195 technical presentations, and were involved in 130 funded research projects.

The Dayton Area Graduate Studies Institute (DAGSI) is a unique university partnership originated by the engineering colleges of the University of Dayton (UD), Wright State University (WSU), and the Air Force Institute of Technology (AFIT). DAGSI coordinates, integrates, and leverages the formidable resources of the partnership, including the combined faculty, facilities, equipment and other supporting elements of all three institutions. Through DAGSI, AFIT, UD, and WSU allow their graduate engineering students to enroll in appropriate course offerings at any of the institutions for full credit toward their degree programs. The Ohio State University and the University of Cincinnati are affiliate members of DAGSI who participate in research collaboration. DAGSI operates the Joint AFRL/DAGSI Research Program, with an annual budget of approximately \$4 million from the Ohio Board of Regents. Through DAGSI, scholarships are available at AFIT on either a part-time or full-time basis. Both civilians and military officers are eligible. For further information contact AFIT/ENA, (937) 255-3636 x4550, DSN 785-3636 x4550, or see www.dagsi.org.

Most of AFIT's research is conducted as the result of Air Force or DoD active sponsorship. The research suggested by these sponsors directly supports on-going defense projects, tasks and sub tasks. The majority of this sponsorship comes from the Air Force Materiel Command, especially the science and technology laboratories of that command. While the bulk of the AFIT research program responds to USAF/DoD suggestions, AFIT also collaborates with other universities on joint projects proposed by the National Science Foundation and other university grantors. AFIT is also active in transferring technology to the private sector through Cooperative Research and Development Agreements (CRDAs).

Committed to the continued involvement of Air Force, DoD, and government agencies in AFIT research and education, AFIT also encourages educational institutions and industry to benefit from AFIT resources through technology transfer. Persons and organizations interested in AFIT research may identify potential faculty collaborators from this report using section 3.2, "Areas of Professional Expertise," which is a list of technology key words followed by the names of involved faculty. Once a possible match is identified, further details regarding the faculty member's research interests may be found in section 3.3, "Faculty Credentials", which also includes his/her phone number and e-mail address. For general information and assistance, contact the Office of Research and Consulting (AFIT/ENR) at (937) 255-3633, DSN 785-3633. AFIT supports the Air Force mission by providing uniquely defense-oriented education through high quality graduate instruction, research, and consultation.

3.1 DEPARTMENT SYMBOLS AND LOCATIONS

Graduate School of Engineering (AFIT/EN), Bldg. 640, 2950 P Street, Wright-Patterson AFB, OH 45433-7765

<u>Symbol</u>	<u>School Office/Department</u>	<u>Room</u>	<u>Telephone. (DSN)</u>
EN	Office of the Dean Dr. Robert A. Calico, Jr., Dean Col Wayne F. Hallgren, Associate Dean Dr. D. Kirk Vaughan, Assistant Dean for Academic Affairs	100	(937) 255-3025 (DSN 785-3025) (937) 255-3025 (DSN 785-3025) (937) 255-4372 (DSN 785-4372) (937) 255-3636, x4557 (DSN 785-3636, x4557)
ENR	Office of Research and Consulting Dr. Heidi R. Ries, Associate Dean for Research	103	(937) 255-3633 (DSN 785-3633)
ENC	Department of Mathematics and Statistics Dr. Alan V. Lair	114	(937) 255-3098 (DSN 785-3098)
ENG	Department of Electrical and Computer Engineering Col Thurmon L. Deloney, II	218	(937) 255-2024 (DSN 785-2024)
ENP	Department of Engineering Physics Dr. Robert L. Hengehold	106	(937) 255-2012 (DSN 785-2012)
ENS	Department of Operational Sciences Col John M. Andrew	177	(937) 255-2549 (DSN 785-2549)
ENV	Department of Engineering and Environmental Management Lt Col WM Brent Nixon	204	(937) 255-2998 (DSN 785-2998)
ENY	Department of Aeronautics and Astronautics Dr. Bradley S. Liebst	201	(937) 255-3069 (DSN 785-3069)

3.2 AREAS OF PROFESSIONAL EXPERTISE

Ada: Graham, R.P.; Hartrum, T.C.
Adaptive Estimation: Maybeck, P.S.; Miller, M.M.
Adaptive Filtering, Multiple Model: Maybeck, P.S.; Miller, M.; Pachter, M.
Adaptive Optics: Gustafson, S.C.; Magee, E.P.; Pachter, M.
Adaptive Robust Estimation: Gustafson, S.C.; Miller, M.; Pachter, M.
Adaptive/Interferometric Clutter Erasure(ACE/ICE): Temple, M.A.
Advanced Distributed Simulation: Jacobs, T.M.
Aero/Gas Dynamics and Propulsion: Bons, J.P.; Franke, M.E.; King, P.I.
Aerodynamics: Bons, J. P.; Franke, M.E.; King, P.I.; Tragesser, S.G.
Aerospace Vehicle Stability and Control: Jacques, D.R.; Liebst, B.S.; Maybeck, P.S.; Miller, M.; Pachter, M.
Air Pollution Transport Modeling: Quinn, D.W.
Air Quality Management: Brothers, H.S.
Aircraft Impact Damage: Palazotto, A.N.
Aircraft Performance: Hallgren, W.F.
Aircraft Stability and Control: Calico, R.A.; Houpis, C.H.; Jacques, D.R.; Liebst, B.S.; Pachter, M.
Algorithm Development/Analysis: Deckro, R.F.; Graham, R.P.; Gustafson, S.C.; Hill, R.R.; Lamont, G.B.; Moore, J.T.; Potoczny, H.B.; Terzuoli, A.J.
Algorithms: Graham, R.P.; Lamont, G.B.
Analysis, Decision: Deckro, R.F.; Kloeber, J.M.; Kramer, S.C.; Lanning, J.W.; Maybeck, P.S.; Smith, E.P.
Analysis, Defense Systems: Hill, R.R.
Analysis, Probabilistic: Bauer, K.W.; Crown, J.S.; Gustafson, S.C.; Maybeck, P.S.; Murdock, W.P.; Reid, T.F.
Analytical Dynamics: Pachter, M.; Palazotto, A.N.; Spenny, C.H.
Applied Aerodynamics: Hallgren, W.F.
Applied Functional Analysis: Baker, W.P.; Chilton, L.K.; Gustafson, S.C.; Lair, A.V.; Oxley, M.E.; Pachter, M.; Quinn, D.W.; Wood, A.W.
Applied Mathematics: Baker, W.P.; Chilton, L.K.; Ericksen, W. S.; Gustafson, S.C.; Lair, A.V.; Lamont, G.B.; Oxley, M.E.; Pachter, M.; Palazotto, A.N.; Quinn, D.W.; Terzuoli, A.J.; Weeks, D.E.; Wood, A.W.
Artificial Intelligence: DeLoach, S.A.; Gunsch, G.H.; Gustafson, S.C.; Lamont, G.B.
Artificial Perception: Gustafson, S.C.; Kabrisky, M.J.; Oxley, M.E.
Astrodynamics: Calico, R.A.; Kelso, T.S.; Pachter, M.; Wiesel, W.E.
Asymptotic and Perturbation Methods: Baker, W.P.
Atmospheric Chemistry: Bailey, W.F.; Burggraf, L.W.; Della-Rose, D.J.; Miner, C.A.; Perram, G.P.; Walters, M.K.; Wolf, P. J.
Atmospheric Optics: Magee, E.P.; Pachter, M.
Automated Reasoning: Brown, W.M.; DeLoach, S.A.; Gunsch, G.H.; Gustafson, S.C.; Kabrisky, M.J.; Lamont, G.B.
Aviation Meteorology: Miner, C.A.
Ballistic Missile Defense: Deloney, T.L.
Battlefield Weather Sensing: Miner, C.A.; Walters, M.K.
Bayes Estimation: Crown, J.S.; Gustafson, S.C.; Kramer, S.C.; Maybeck, P.S.; Moore, A.H.; Pachter, M.
Bilevel Programming: Deckro, R.F.; Moore, J.T.
Biodegradation and Biodeterioration: Bleckmann, C.A.; Goltz, M.N.; Shelley, M.L.
Boundary Layer Stability and Transition: Franke, M.E.
Boundary Value Problems, Free/Moving: Collins, P.J.; Oxley, M.E.; Chilton, L.K.; Terzuoli, A.J.; Wood, A.W.
Campaign Planning: Deckro, R.F.
Cascade Flows: King, P.I.
Cavity Acoustics: Baker, W.P.; Franke, M.E.
Chemical Kinetics: Bailey, W.F.; Burggraf, L.W.; Heyse, E. C.; Perram, G.P.; Weeks, D.E.; Wolf, P.J.
Chemical Toxicity: Burggraf, L.W.

Combat Modeling: Kloeber, J.M.; Miller, J.O.
Combustion Molecular Dynamics: Little, J.K.
Command Control Communications: Raines, R.A.; Temple, M.A.
Communication Theory: Magee, E.P.; Temple, M.A.
Communications Networks: Baldwin, R.O.; Chan, Y.; Deckro, R.F.; Raines, R.A.; Temple, M.A.
Complex Adaptive Simulation: Bailey, T.G.; Hill, R.R.; Miller, J.O.; McIntyre, G.A.
Composite Materials: Mall, S.; Palazotto, A.N.
Computation, Parallel/Distributed: Hartrum, T.C.; Lamont, G.B.; Terzuoli, A.J.
Computational Complexity: Moore, J.T.; Deckro, R.F.; Chrissis, J.W.; Chan, Y.; Hill, R.R.
Computational Electromagnetics: Chilton, L.K.; Collins, P.J.; Lamont, G.B.; Terzuoli, A.J.; Wood, A.W.
Computational Electronics and Nanoelectronics: Lott, J.A.
Computational Structural Mechanics: Chilton, L.K.
Computer Aided Design (CAD): Brothers, C.P.; Jacobs, T.M.; Lott, J.A.
Computer Aided Software Engineering: Jacobs, T.M.
Computer Architecture: Brothers, C.P.; Lamont, G.B.
Computer Communication Networks: Baldwin, R.O.; Gunsch, G.H.; Lamont, G.B.; Raines, R.A.; Reid, T.F.; Temple, M.A.
Computer Graphics: Jacobs, T.M.; Weeks, D.E.
Computer Simulation: Bailey, T.G.; Bailey, W.F.; Bauer, K.W.; Chambal, S. P.; Chrissis, J.W.; Hartrum, T.C.; Jodoin, V.J.; Kelso, T.S.; Kloeber, J.M.; McIntyre, G.A.; Miller, J.O.; Pohl, E. A.; Raines, R.A.; Stytyz, M.R.; Weeks, D.E.
Constitutive Modeling: Haritos, G.K.
Contaminant Transport: Goltz, M.N.; LaPuma, P.T.; Oxley, M.E.; Quinn, D.W.; Shelley, M.L.; Thal, A.E.
Contaminated Groundwater Assessment: LaPuma, P.T.; Shelley, M.L.
Continuous Simulation: Kelso, T.S.; Pachter, M.
Continuum Mechanics: Mall, S.; Turcotte, J.S.
Control Systems, Aerospace: D'Azzo, J.J.; Houppis, C.H.; Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Control Systems, Computational and Numerical Methods: Jacques, D.R.; Lamont, G.B.; Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.; Wiesel, W.E.
Control Systems, Computer-Aided Design: D'Azzo, J.J.; Lamont, G.B.; Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Control Systems, Intelligent: Lamont, G.B.; Maybeck, P.S.; Miller, M.; Pachter, M.
Control Systems, Parallel/Distributed: Lamont, G.B.; Pachter, M.
Control Systems, Robotic: Miller, M.; Pachter, M.
Control Theory & Systems: Calico, R.A.; D'Azzo, J.J.; Houppis, C.H.; Jacques, D.R.; Kramer, S.C.; Lamont, G.B.; Liebst, B.S.; Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Control Theory, Linear/Nonlinear: D'Azzo, J.J.; Houppis, C.H.; Jacques, D.R.; Kramer, S.C.; Liebst, B.S.; Maybeck, P.S.; Miller, M.M.; Pachter, M.; Raquet, J.F.; Wiesel, W.E.
Cost Analysis: Brothers, H.S.; Kloeber, J.M.; Gallagher, M. A.; Nixon, W.B.
Cost Models: Deckro, R.F.; Gallagher, M. A.
Critical Path Methods: Deckro, R.F.; Chrissis, J.W.
Data Acquisition: King, P.I.
DataBases: Chan, Y.; Lamont, G.B.; Talbert, M.L.
Data Mining: Talbert, M.L.
Data Processing: Talbert, M. L.
DataBase Management: Talbert, M.L.
Database Systems, Management: Potoczny, H.B.; Talbert, M.L.
Database Systems, Object-Oriented: Potoczny, H.B.; Talbert, M.L.
Decision Support Systems: Gunsch, G.H.
Design of Experiments: Bauer, K.W.; Bailey, T.G.; Chambal, S. P.; Crown, J.S.; Hill, R.R.; Lanning, J.W.; Miller, J.O.; Moore, A.H.; Reynolds, D.E.; White, E.D.
Differential Games: Pachter, M.

Digital Communications: Magee, E.P.; Raines, R.A.; Reid, T.F.; Temple, M.A.
Digital Control Systems: D'Azzo, J.J.; Houpis, C.H.; Lamont, G.B.; Maybeck, P.S.; Miller, M.M.; Pachter, M.
Dynamic Meteorology: Miner, C.A.; Walters, M.K.
Dynamics, Aircraft/Spacecraft: Liebst, B.S.; Pachter, M.; Spenny, C.H.; Tragesser, S.G.
Dynamics, Chaotic: Chan, Y.; Wiesel, W.E.
Ecological Resource Management: Bleckmann, C.A.; Shelley, M.L.
Economic Models: Chan, Y.; Deckro, R.F.
Economic Theory: Chan, Y.
Eigenstructure Assignment and Control: D'Azzo, J.J.; Liebst, B.S.; Pachter, M.
Elasticity: Chilton, L.K.
Electroluminescence: Largent, C.C.
Electromagnetic Propagation Phenomenology: Temple, M.A.; Terzuoli, A.J.
Electromagnetic Radiation and Scattering: Baker, W.P.; Chilton, L.K.; Collins, P.J.; Terzuoli, A.J.; Wood, A.W.
Electromagnetic Theory: Collins, P.J.; Pyati, V.P.; Terzuoli, A.J.
Electromagnetics: Collins, P.J.; Pyati, V.P.; Terzuoli, A.J.
Electronic Warfare: Miller, M.; Pyati, V.P.; Raquet, J.F.; Temple, M.A.
Electro-optics: Gustafson, S.C.; Lott, J.A.; Magee, E.P.; Marciniak, M.A.; Roh, W.B.; Hengehold, R.L.; Largent, C.C.
Embedded Software Systems: Baldwin, R.O.; Lamont, G.B.
Encryption/Decryption: Potoczny, H.B.
Engineering Design Optimization: Chrissis, J.W.
Environmental Chemistry: Burggraf, L.W.
Environmental Impacts of Equipment and Facilities: Bleckmann, C.A.; Brothers, H.S.; Deckro, R.F.; Kloeber, J.M.; LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.
Environmental Management in Acquisition: Brothers, H.S.
Environmental Management Systems: Brothers, H.S.; LaPuma, P.T.; Nixon, W.B.
Environmental Management: Bleckmann, C.A.; Brothers, H.S.; Deckro, R.F.; Goltz, M.N.; Holt, D.T.; Kloeber, J.M.; LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.; Thal, A.E.
Environmental Microbiology: Bleckmann, C.A.
Environmental Protection: Deckro, R.F.; Kloeber, J.M.
Environmental Remediation - Chemical and Radioactive: Bleckmann, C.A.; Goltz, M.N.; Nixon, W.B.; Perram, G.P.
Environmental Risk Assessment: Chan, Y.; Deckro, R.F.; Kloeber, J.M.; LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.
Environmental Risk Reduction Engineering: Goltz, M.N.; LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.
Epitaxial Crystal Growth: Lott, J.A.
Evolutionary Computation: Lamont, G.B.
Executive Development: Holt, D.T.
Expert Systems: DeLoach, S.A.; Gunsch, G.H.; Lamont, G.B.
Facility Engineering Management: Brothers, H.S.; Nixon, W.B.
Facility Location: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Moore, J. T; Nixon, W.B.
Failure Mechanisms, Monolithic/Multiphase Materials: Haritos, G.K.
Fatigue: Haritos, G.K.; Mall, S.
Fault Detection and Isolation in Dynamic Systems: Maybeck, P.S.; Miller, M.
Finite Array Scattering (EM Waves): Collins, P.J.; Terzuoli, A.J.
Finite Elements/Differences: Chilton, L.K.; Mall, S.; Palazotto, A.N.; Quinn, D.W.; Terzuoli, A.J.; Wood, A.W.
Fire Control: Pachter, M.
Flexible Structure Control: Jacques, D.R.; Liebst, B.S.; Maybeck, P.S.; Pachter, M.
Flight Control Systems: D'Azzo, J.J.; Houpis, C.H.; Jacques, D.R.; Liebst, B.S.; Maybeck, P.S.; Miller, M.; Pachter, M.
Flight Test Engineering: Liebst, B.S.; Miller, M.; Pachter, M.; Raquet, J.F.

Fluid Dynamics, Viscous/Incompressible: Bons, J.P.; Franke, M.E.; King, P.I.
Fluid Mechanics: Bons, J.P.; Franke, M.E.; King, P.I.; Little, J.K.
Fluidics: Franke, M.E.
Forecasting: Chan, Y.; Gallagher, M. A.; Gustafson, S.C.; Lanning, J.W.
Fourier Optics: Gustafson, S.C.; Kabrisky, M.J.; Magee, E.P.; Rogers, S.K.; Terzuoli, A.J.
Fracture Mechanics: Haritos, G.K.; Mall, S.
Fuzzy Logic Control: Lamont, G.B.; Pachter, M.
Gallium Arsenide Lasers: Hengehold, R.L.; Largent, C.C.; Marciniak, M.A.
Gas Dynamics: Bailey, W.F.; Franke, M. E.; King, P.I.; Perram, G.P.
Gas Turbine Cooling: Bons, J. P.
General Systems Theory: Kramer, S.C.; Smith, E.P.
Genetic Algorithms: Hill, R.R.; McIntyre, G.A.; Moore, J.T.
Geographic Information Systems: Chan, Y.
Global Communications: Raines, R.A.; Temple, M.A.
Global Positioning Systems: Miller, M.M.; Raquet, J.F.
Goal Programming: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Moore, J.T.
Goodness-of-Fit Reliability Testing: Crown, J.S.; Moore, A.H.
Graph Theory and Optimization: Smith, E.P.
Graph Theory: Lamont, G.B.; Potoczny, H.B.
Graphics: Jacobs, T.M.
Ground Water Modeling: Goltz, M.N.; Lair, A.V.; Oxley, M.E.; Shelley, M.L.
Ground Water Monitoring and Remediation: Bleckmann, C.A.; Goltz, M.N.; Thal, A.E.
Guidance & Control: Houppis, C.H.; Jacques, D.R.; Liebst, B.S.; Maybeck, P.S.; Miller, M.M.; Pachter, M.; Raquet, J.F.; Tragesser, S.G.
Guidance and Navigation: Maybeck, P.S.; Miller, M.M.; Pachter, M.; Raquet, J.F.
Hazardous Materials Management: LaPuma, P.T.; Nixon, W.B.
Hazardous Waste Management: Nixon, W.B.; Thal, A.E.
Hazardous Waste Treatment Technologies: Bleckmann, C.A.; Goltz, M.N.; Nixon, W.B.; Thal, A.E.
Health Physics: John, G.
Heat Transfer: Bons, J. P.; Franke, M.E.; King, P.I.; Little, J.K.
High Performance Computing: Lamont, G.B.
High Range Resolution Radar: Temple, M.A.; Terzuoli, A.J.
Hueristics: Bailey, T.G.; Deckro, R.F.; Hill, R.R.; McIntyre, G.A.; Moore, J.T.
Human Information Processing: Chan, Y.; Kabrisky, M.J.
Human Resource Management: Holt, D.T.
Hypersonics: Little, J.K.
Image Generation/Storage/Processing: Gustafson, S.C.; Kabrisky, M.J.; Magee, E.P.
Image Reconstruction: Gustafson, S.C.; Magee, E.P.; Terzuoli, A.J.;
Imaging, Sensors and Signal Processing: Gustafson, S.C.; Lamont, G.B.; Magee, E.P.
Industrial Engineering: Chambal, S.P.; Chrissis, J.W.; Deckro, R.F.; Lanning, J.W.
Inertial Navigation Systems: Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Information Operations: Chan, Y.; Deckro, R.F.; Gunsch, G.H.; Raines, R.A.
Information Survivability: Deckro, R.F.; Gunsch, G.H.; Raines, R.A.
Information Survivability: Information Systems: DeLoach, S.A.; Gunsch, G.H.; Lamont, G.B.; Talbert, M.L.
Information Visualization: Jacobs, T.M.
Information Warfare: Chan, Y.; Deckro, R.F.; Gunsch, G.H.; Raines, R.A.; Talbert, M.L.; Temple, M.A.
Infrared countermeasures: Largent, C.C.
Infrared lasers: Largent, C.C.; Marciniak, M.A.; Hengehold, R.L..
Infrared signatures: Largent, C.C.
Integer Programming: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Hill, R.R.; Moore, J.T.
Integrated Navigation Systems: Miller, M.; Raquet, J.F.
Intelligent Interfaces: DeLoach, S.A.; Gunsch, G.H.; Talbert, M.L.
Intelligent Systems: Gunsch, G.H.; Gustafson, S.C.; Kabrisky, M.J.

Inventory Analysis and Control: Chrissis, J.W.; Deckro, R.F.
Job-Shop Scheduling: Deckro, R.F.
Kalman Filters: Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Knowledge Based Systems: DeLoach, S.A.; Graham, R.P.; Gunsch, G.H.; Lamont, G.B.; Talbert, M.L.
Laser Optics: Gustafson, S.C.; Magee, E.P.
Laser Spectroscopy: Burggraf, L.W.; Marciniak, M.A.; Perram, G.P.,
Lasers - Chemical: Perram, G.P.
Lasers - Semiconductor: Lott, J.A.
Lasers - Vertical Cavity Surface Emitting: Lott, J.A.
Learning Theory: Gustafson, S.C.; Reynolds, D.E.
Lidar: Gustafson, S.C.; Magee, E.P.
Life Cycle Management: Deckro, R.F.
Light-Emitting Diodes: Lott, J.A.
Linear Optics: Gustafson, S.C.; Kabrisky, M.J.; Magee, E.P.
Linear Programming: Bailey, T.G.; Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Moore, J.T.
Linear Systems: Kabrisky, M.J.; Magee, E.P.; Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.; Terzuoli, A.J.
Logic Design: Brown, W.M.; Lamont, G.B.
Logistics: Chan, Y.; Hill, R.R.
Low Observables: Collins, P.J.; Terzuoli, A.J.
Luminescence: Hengehold, R.L.; Largent, C.C.; Marciniak, M.A.; Yeo, Y.K.
Machine Learning: Gunsch, G.H.; Gustafson, S.C.; Kabrisky, M.J.
Maintainability: Chambal, S. P.; Murdock, W.P.; Temple, M.A.; Terzuoli, A.J.
Management Cybernetics: Reynolds, D.E.
Management Engineering: Deckro, R.F.
Management Planning and Control: Deckro, R.F.
Manufacturing: Chrissis, J.W.; Deckro, R.F.
Mass Transport Phenomena: Goltz, M.N.; Shelley, M.L.
Materials Chemistry: Burggraf, L.W.
Mathematical Models: Deckro, R.F.; Gustafson, S.C.; Moore, J.T.; Chrissis, J.W.
Mathematical Programming: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Lamont, G.B.; Moore, J.T.; Pachter, M.; Reid, T.F.
Maximum Thrust Propulsive Nozzles: Franke, M.E.
Mechanics: Impact and Penetration: Torvik, P.J.
Medical Imaging: Collins, P.J.; Terzuoli, A.J.
Mesoscale Meteorology: Miner, C.A.; Walters, M.K.
Meteorology: Huffines, G.R.; Miner, C.A.; Walters, M.K.
Meteorological Data: Talbert, M.L.
Micro-Electro-Mechanical Systems (MEMS): Lott, J.A.
Microelectronics: Brothers, C.P.; Lott, J.A.
Microwave Acoustics: Terzuoli, A.J.
Mid-Infrared Semiconductor Lasers: Hengehold, R.L.; Marciniak, M.A.; Weeks, D.L.
Military Space Systems: Deloney, T.L.; Kelso, T.S.
Models: Deckro, R.F.; Hill, R.R.; McIntyre, G. A.; Moore, J.T.
Molecular Dynamics: Perram, G.P.; Weeks, D.E.
Molecular Electronics: Lott, J.A.
Molecular Orbital Calculations: Burggraf, L.W.
Molecular Spectroscopy: Burggraf, L.W.; Perram, G.P.; Weeks, D.E.
Mössbauer Spectrometry: John, G.
Multicriteria Decision Making: Chan, Y.; Kloeber, J.M.; Lamont, G.B.; LaPuma, P.T.; Pachter, M.
Multirate and Wavelet Signal Processing: Gustafson, S.C.
Multivariable Control: D'Azzo, J.J.; Houppis, C.H.; Jacques, D.R.; Lamont, G.B.; Liebst, B.S.; Maybeck, P.S.; Miller, M.; Pachter, M.

Multivariate Analysis: Barr, D.R.; Bauer, K.W.; Lamont, G.B.; Maybeck, P.S.; Miller, M.; Reynolds, D.E.

Network Analysis: Chan, Y.; Deckro, R.F.; Hill, R.R.; Kloeber, J.M.

Network Flows: Bailey, T.G.; Chan, Y.; Chrissis, J.W.; Deckro, R.F.

Neural Networks: Bauer, K.W.; Gustafson, S.C.; Kabrisky, M.J.; McIntyre, G.A.; Oxley, M.E.; Pachter, M.

Nonlinear Control: Jacques, D.R.; Pachter, M.; Wiesel, W.E.

Nonlinear Dynamics: Agnes, G.S.; Liebst, B.S.; Pachter, M.; Palazotto, A.N.; Wiesel, W.E.

Nonlinear Mechanics: Calico, R.A.; Pachter, M.; Palazotto, A.N.; Wiesel, W.E.

Nonlinear Optics: Gustafson, S.C.; Magee, E.P.

Nonlinear Programming: Chrissis, J.W.; Deckro, R.F.

Nonlinear Systems Stability: Pachter, M.; Wiesel, W.E.

Nonlinear Vibrations: Pachter, M.

Nonlinear/Stochastic Systems Analysis: Kramer, S.C.; Maybeck, P.S.; Pachter, M.; Reid, T.F.; Smith, E.P.

Nonparametric Statistics: Hill, R.R.; Miller, J.O.; Lanning, J.W.

Nuclear Chemical Engineering, Computational: Mathews, K.A.

Nuclear Fallout Modeling: Jodoin, V.J.

Nuclear Proliferation: Jodoin, V.J.

Nuclear Radiation Detection: Burggraf, L.W.

Nuclear Radiation Spectroscopy and Detection: John, G..

Nuclear Radiation Transport, Computational: Mathews, K.A.

Nuclear Weapon Effects Simulation: Mathews, K.A.

Nuclear Weapon Effects: Jodoin, V.J.; Mathews, K.A.; Susalla, M.J.

Numerical Analysis: Bailey, W.F.; Baker, W.P.; Chilton, L.K.; Gustafson, S.C.; Mathews, K.A.; Moore, A.H.; Palazotto, A.N.; Oxley, M.E.; Quinn, D.W.; Weeks, D.E.; Wood, A.; Terzuoli, A.J.

Numerical Weather Prediction: Walters, M.K.

Object-Oriented Programming and Simulation: Bailey, T.G.; Chambal, S.P.; DeLoach, S.A.; Graham, R.P.; Hartum, T.C.; Kelso, T.S.; Kloeber, J.; Lamont, G.B.; Miller, J.O.; Talbert, M.L.

Operations Research: Andrew, J. M.; Bailey, T.G.; Chan, Y.; Chrissis, J.W.; Crown, J.S.; Deckro, R.F.; Kloeber, J.M.; McIntyre, G.A.; Miller, J.O.; Moore, A.H.; Moore, J.T.; Murdock, W.P.; Pachter, M.; Reid, T.F.

Operations Testing and Evaluation: Crown, J.S.; Reid, T.F.

Optical Diagnostics: Hengehold, R.L.; Marciniak, M.A.; Perram, G.P.; Roh, W.B.

Optical Information Processing: Gustafson, S.C.; Kabrisky, M.J.; Magee, E.P.

Optical Neural Computers: Gustafson, S.C.; Kabrisky, M.J.

Optimal Control: Jacques, D.R.; Pachter, M.; Reid, T.F.; Wiesel, W.E.

Optimal Estimation and Stochastic Control: Gustafson, S.C.; Jacques, D.R.; Kramer, S.C.; Maybeck, P.S.; Miller, M.; Pachter, M.

Optimization Theory: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Gustafson, S.C.; Lamont, G.B.; Maybeck, P.S.; Moore, J.T.; Oxley, M.E.; Pachter, M.; Reid, T.F.

Optimization, Network and Combinatorial: Chan, Y.; Lamont, G.B.; Moore, J.T.; Deckro, R.F.

Optimization: Hill, R.R.; Moore, J.T.

Optoelectronic/Semiconductor Device Physics: Hengehold, R.L.; Largent, C.C.; Marciniak, M.A.; Yeo, Y.K.

Optoelectronics: Lott, J.A

Orbital Mechanics: Kelso, T.S.; Tragesser, S.G.; Wiesel, W.E.

Organic Chemistry: Bleckmann, C.A.; Goltz, M.N.

Organizational Change & Development: Holt, D.T.

Organizational Climate and Cultural Assessments: Holt, D.T.

Parallel Processors: Brothers, C.P.; Lamont, G.B.; Raines, R.A.

Parameter Estimation: Crown, J.S.; Gustafson, S.C.; Lamont, G.B.; Maybeck, P.S.; Miller, M.; Pachter, M.; Quinn, D. W.

Parametric Programming: Deckro, R.F.; Moore, J.T.

Pattern Recognition: Chan, Y.; Gustafson, S.C.; Kabrisky, M.J.; Terzuoli, A.J.
Personnel Evaluation: Holt, D.T.
PERT: Deckro, R.F.
Pharmacokinetic Modeling: Quinn, D.W.; Shelley, M.L.
Phased Array Antennas: Collins, P.J.; Terzuoli, A.J.
Photonic Crystals: Wood, A.W.
Photonics: Lott, J.A.
Physical Meteorology: Huffines, G.R.
Physics of the Upper Atmosphere (Ionosphere & Magnetosphere): Bailey, W. F.; Della-Rose, D.J.; Wolf, P.J.
Planetary Astronomy: Wiesel, W.E.
Pointing and Tracking: Maybeck, P.S.; Pachter, M.
Pollution Prevention: Brothers, H.S.; LaPuma, P.T.
Probability and Statistics: Bailey, T.G.; Barr, D.R.; Bauer, K.W.; Chan, Y.; Crown, J.S.; Gustafson, S.C.; Hill, R.R.; Kloeber, J.M.; Lanning, J.W.; Magee, E.P.; McIntyre, G.A.; Miller, J.O.; Moore, A.H.; Murdock, W.P.; Pachter, M.; Reid, T.F.; Reynolds, D.E.
Production Models: Deckro, R.F.; Kloeber, J.M.
Program Management: Brothers, H.S.; Deckro, R.F.; Holt, D.T.; Nixon, W.B.
Quadratic Programming: Deckro, R.F.; Chrissis, J.W.
Quality Improvement: Bauer, K.W.; Hill, R.R.; Holt, D.T.; Lanning, J.W.; Nixon, W.B.; Reynolds, D.E.
Quantitative Feedback Theory: Houppis, C.H.; Pachter, M.
Queueing Networks: Chan, Y.; Chrissis, J.W.
Radar Cross-Section Statistics: Gustafson, S.C.; Magee, E.P.; Pyati, V.P.; Terzuoli, A.J.
Radar Detection: Magee, E.P.; Pyati, V.P.; Terzuoli, A.J.
Radar Measurements: Collins, P.J.; Magee, E.P.; Pyati, V.P.; Temple, M.A.; Terzuoli, A.J.
Radar: Magee, E.P.; Pyati, V.P.; Temple, M.A.; Terzuoli, A.J.
Radiation Imaging: Burggraf, L.W.
Radomes: Collins, P.J.; Temple, M.A.
Random Variate Modeling and Generation: Gustafson, S.C.; Hill, R.R.; Maybeck, P.S.; Miller, J.O.; Pachter, M.
Real-Time Communications Protocol: Baldwin, R.O.
Reliability: Barr, D.R.; Chan, Y.; Chambal, S. P.; Crown, J.S.; Moore, A.H.; Murdock, W.P.
Remote Sensing: Burggraf, L.W.; Gustafson, S.C.; Kelso, T.S.; Largent, C.C.; Magee, E.P.; McIntyre, G.A.; Perram, G.P.; Terzuoli, A.J.
Research Management: Deckro, R.F.; Kloeber, J.M.
Response Surface Methodology: Lanning, J.W.
Risk Analysis: Deckro, R.F.; Kloeber, J.M.; LaPuma, P.T.; Shelley, M.L.
Risk Communication and Management: LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.
Robotics: Gustafson, S.C.; Magee, E.P.; Spenny, C.H.
Routing: Bailey, T.G.; Chan, Y.; Deckro, R.F.; Hill, R.R.; Moore, J.T.
Satellite Communications Systems: Raines, R.A.; Temple, M.A.
Satellite Dynamics: Pachter, M.; Spenny, C.H.; Wiesel, W.E.
Satellite Image Processing: Chan, Y.; Gustafson, S.C.; Kelso, T.S.
Scheduling: Deckro, R.F.; Hill, R.R.; Moore, J.T.
Scientific Visualization: Gustafson, S.C.; Lamont, G.B.
Search Theory: Lamont, G.B.; Pachter, M.
Secure Communications: Gunsch, G.H.; Potoczny, H.B.; Raines, R.A.
Semiconductor devices: Hengehold, R.L.; Largent, C.C.; Yeo, Y.K.;
Semiconductor lasers: Hengehold, R.L.; Largent, C.C.; Marciniak, M.A.; Weeks, D.E.
Semiconductors Physics: Brothers, C.P.; Hengehold, R.L.; Lott, J.A.; Marciniak, M.A.; Yeo, Y.K.
Sensor Management: McIntyre, G.A.
Sensor Scheduling: McIntyre, G.A.
Sensors: Brothers, C.P.; Burggraf, L.W.
Shell Analysis: Palazotto, A.N.

Shock and Vibration: Palazotto, A.N.
Signal Processing: Gustafson, S.C.; Kabrisky, M.J.; Lamont, G.B.
Silicon and Silicon Carbide Chemistry: Burggraf, L.W.
Smart Structures: Agnes, G.S.; Jacques, D.R.
Software Engineering, Architectures: DeLoach, S.A.; Graham, R.P.; Hartrum, T.C.; Jacobs, T.M.; Lamont, G.B.
Software Engineering, Formal Methods: DeLoach, S.A.; Graham, R.P.; Hartrum, T.C.; Lamont, G.B.
Software Engineering, Knowledge-Based: DeLoach, S.A.; Graham, R.P.; Hartrum, T.C.; Lamont, G.B.
Software Engineering: Baldwin, R.O.; DeLoach, S.A.; Graham, R.P.; Hartrum, T.C.; Jacobs, T.M.; Talbert, M.L.
Software Visualization: Jacobs, T.M.
Solid State Physics: Lott, J.A.
Space Communications: Raines, R.A.; Temple, M.A.
Space Electronics: Brothers, C.P.
Spatial-Temporal Modeling: Chan, Y.; Gustafson, S.C.; Lamont, G.B.
Spectral Estimation: Gustafson, S.C.; Pachter, M.
Speech and Image Processing: Gustafson, S.C.; Kabrisky, M.J.
Speech Recognition: Gustafson, S.C.; Kabrisky, M.J.
Statistical Aspects of Simulation: Bailey, T.G.; Bauer, K.W.; Crown, J.S.; Gustafson, S.C.; Hill, R.R.; Kloeber, J.M.; Maybeck, P.S.; Miller, J.O.; Reid, T.F.; Reynolds, D.E.
Statistical Modeling: Chan, Y.; Crown, J.S.; Gustafson, S.C.; Hill, R.R.; Kloeber, J.M.; McIntyre, G.A.; Miller, J.O.; Reynolds, D.E.; White, E.D.
Statistical Optics: Gustafson, S.C.; Magee, E.P.; Pachter, M.
Statistical Process Control: Bauer, K.W.; Gustafson, S.C.; Lanning, J.W.; Pachter, M.; Reynolds, D.E.
Statistics, Parametric: Gustafson, S.C.
Statistics, Applied/Theoretical: Bauer, K.W.; Chan, Y.; Chrissis, J.W.; Crown, J.S.; Gustafson, S.C.; Miller, J.O.; Moore, A.H.; Reid, T.F.; Reynolds, D.E.; White, E.D.
Statistics, Environmental: Bauer, K.W.; Reynolds, D.E.
Statistics, Multivariate: Barr, D.R.; Bauer, K.W.; Gustafson, S.C.; Maybeck, P.S.; Reynolds, D.E.
Statistics, Parametric: Crown, J.S.; Reynolds, D.E.
Steganography: Potoczny, H.B.
Stochastic Search Algorithms: Gustafson, S.C.; Lamont, G.B.; Pachter, M.
Stochastic Systems: Andrew, J. M.; Barr, D.R.; Chrissis, J.W.; Gustafson, S.C.; Maybeck, P.S.; Miller, M.M.; Moore, A.H.; Murdock, W.P.; Raquet, J.F.; Reid, T.F.
Strategic Management: Holt, D.T.
Stress Analysis: Torvik, P.J.
Structural Control Optimization/Dynamics: Calico, R.A.; Jacques, D.R.; Liebst, B.S.; Pachter, M.
Structural Dynamics: Turcotte, J.S.
Superlattice Structures: Lott, J.A.; Weeks, D.E.
Supersonic Flight Trajectory Optimization: Pachter, M.
Surface Chemistry and Physics: Burggraf, L.W.
Surfactant Enhanced Subsurface Remediation: Thal, A.E.
Synoptic Meteorology: Miner, C.A.
System Dynamics: Pachter, M.; Shelley, M.L.
System Identification: Pachter, M.
Systems Engineering: Miller, M.M.; Talbert, M.L.
Systems Management: Deckro, R.F.
Technology Assessment: Chan, Y.; Kloeber, J.M.
Technology Transfer: Deckro, R.F.; Goltz, M.N.
Telecommunications: Raines, R.A.; Reid, T.F.; Temple, M.A.
Test Design and Analysis: Crown, J.S.
Thrust Vector Control: Franke, M.E.; Pachter, M.
Total Quality Management: Deckro, R.F.
Trajectory Optimization: Tragesser, S.G.

Transportation Systems Analysis: Chan, Y.; Deckro, R.F.; Hill, R.R.; Kloeber, J.M.; Moore, J.T.
Very Large Scale Integrated Circuits (VLSI): Brothers, C.P.; Lott, J.A.
Vibration and Damping: Torvik, P.J.
Vibration Suppression - Active and Passive: Agnes, G.S.; Jacques, D.R.
Vibrational Dynamics: Calico, R.A.; Pachter, M.; Palazotto, A.N.; Weeks, D.E.
Virtual Environments: Gustafson, S.C.; Jacobs, T.M.
Viscoplasticity: Palazotto, A.N.
Voice Communications: Raines, R.A.
Wargaming: Kloeber, J.M.; McIntyre, G.A.; Pachter, M.
Wastewater Analysis and Treatment: Bleckmann, C.A.; Goltz, M.N.; Shelley, M.L.
Wave Propagation and Scattering: Baker, W.P.; Collins, P.J.; Gustafson, S.C.; Magee, E.P.; Terzuoli, A.J.; Wood, A.W.
Wave Propagation: Baker, W.P.; Collins, P.J.; Temple, M.A.; Terzuoli, A.J.
Wavelet Analysis: Gustafson, S.C.; Kabrisky, M.J.; Oxley, M.E.
Weakly Ionized Gases: Bailey, W.F.; Della-Rose, D.J.
Weapons Effects (Non-Nuclear): Franke, M.E.
Weather Analysis and Forecasting: Miner, C.A.

3.3 FACULTY CREDENTIALS

AGNES, GREGORY S., Capt, Assistant Professor of Aerospace Engineering, Dept of Aeronautics and Astronautics, (AFIT/ENY); B.S.A.E., Rensselaer Polytechnic Institute, 1989; M.S.A.E., University of Maryland, 1991; PhD, Engineering Mechanics, Virginia Tech, 1997. Capt Agnes previously worked in the Structural Dynamics Branch of the Air Force Research Laboratory. His research interests center around active and passive vibration suppression, smart structures, and nonlinear dynamics. He has published numerous conference and journal papers and is a member of the AIAA and ASME. Tel. 937-255-6565, x4317 (DSN 785-6565 x 4317), email = Gregory.Agnes@afit.af.mil

ANDREW, JOHN M., Col, Assistant Professor of Operations Research and Head, Dept of Operational Sciences (AFIT/ENS); BS, United States Air Force Academy, 1976; SM, Harvard University, 1982; PhD, Harvard University, 1985. Col Andrew's areas of interest include training simulations and stochastic processes. He is a member of the Institute for Operations Research and Management Science (INFORMS) and the Military Operations Research Society (MORS). Tel 937-255-6565, x4329 (DSN 785-6565, x4329), email = John.Andrew@afit.af.mil

BAILEY, T. GLENN, Lt Col, Assistant Professor of Operations Research, Dept of Operational Sciences (AFIT/ENS); BS, United States Air Force Academy, 1978; MA, Oklahoma State University, 1982; MS, Air Force Institute of Technology, 1988; PhD, University of Texas at Austin, 1995. Lt Col Bailey's areas of interest include simulation, response surface methodology, heuristics, and stochastic programming. He is a member of the Institute for Operations Research and Management Science (INFORMS), the Society for Industrial and Applied Mathematics (SIAM), and the Military Operations Research Society (MORS). Tel 937-255-6565, x4332 (DSN 785-6565, x4332), email = Glenn.Bailey@afit.af.mil

BAILEY, WILLIAM F., Associate Professor of Physics, Dept of Engineering Physics, (AFIT/ENP); BS, United States Military Academy, 1964; MS, The Ohio State University, 1966; PhD, Air Force Institute of Technology, 1978. Professor Bailey's research interests center on weakly ionized gases and reactive kinetics, with special applications to semiconductor processing in gas discharges, shock characterization in ionized flows and solutions of the inhomogeneous electron kinetic equation. Dr. Bailey has published over 20 papers in referred conference proceedings and international journals and chaired over 25 theses and dissertations. He is a member of Tau Beta Pi, Sigma Pi Sigma, and Sigma Xi. . Tel. 937-255-3636, x4501 (DSN 785-3636, x4501), email = William.Bailey@afit.af.mil

BAKER, WILLIAM P., Associate Professor of Mathematics, Dept of Mathematics and Statistics, (AFIT/ENC); BA, University of California at Irvine, 1969; MA, University of California at Irvine, 1970; PhD, Northwestern University, 1987. Dr. Baker's research interests include asymptotic and perturbation methods, wave propagation and scattering theory, applied mathematics, functional analysis, low observables, and numerical analysis. Dr. Baker's current research is in acoustical and electromagnetic scattering, and vibrational dynamics of composite sandwich material. His recent papers have been on fractional derivative models of viscoelastic materials. Dr. Baker is a Master Navigator with prior military assignments in flight test, satellite communications, cruise missile and radar analysis. Tel. 937-255-3636, x4517 (DSN 785-3636, x4517), email = William.Baker@afit.af.mil

BALDWIN, RUSTY O., Maj, Assistant Professor of Computer Engineering, Department of Electrical and Computer Engineering (AFIT/ENG), BSEE, New Mexico State University, 1987; MS, Computer Engineering, Air Force Institute of Technology, 1992; PhD, Virginia Polytechnic Institute and State University, 1999. His research interests include computer communication networks, queueing theory, performance modeling, and analysis and simulation of real-time communication systems. Tel. 937-255-3636, x4582 (DSN 785-3636, x4582), email = Rusty.Baldwin@afit.af.mil

BARR, DAVID R., Associate Professor Emeritus of Statistics, Dept of Mathematics and Statistics, (AFIT/ENC); BA, Miami University, 1954; MA, Miami University, 1954; MS, Miami University, 1957; PhD, State University of Iowa, 1964. Dr. Barr's interests include probability, statistics and stochastic processes, as well as the design of experiments. Tel. 937-255-3636, x4529 (DSN 785-3636, x4529), email = David.Barr@afit.af.mil

BAUER, KENNETH W., Jr., Professor of Operations Research, Dept of Operational Sciences (AFIT/ENS); BS, Miami University (Ohio), 1976; MEA, University of Utah, 1980; MS, Air Force Institute of Technology, 1981; PhD, Purdue University, 1987. Dr. Bauer's research interests include the statistical aspects of simulation, design of experiments, neural networks, and multivariate statistics. Tel. 937-255-6565, x4326 (DSN 785-6565, x4326), email = Kenneth.Bauer@afit.af.mil

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BONS, JEFFREY P., Maj, Assistant Professor of Aeronautical Engineering, Dept. of Aeronautics and Astronautics, (AFIT/ENY); BS, Massachusetts Institute of Technology, 1988; MS, Massachusetts Institute of Technology, 1990; PhD, Massachusetts Institute of Technology, 1997. Major Bons' research interests include fluid dynamics and heat transfer with a focus on applications to gas turbine engines. He has published several articles relating to turbine cooling and compressor stability with a research emphasis on experimentation. Major Bons' previous assignment was as a research engineer in the Propulsion Directorate of Wright Laboratory where he was awarded the 1995 S.D. Heron Award for Basic Research. Tel. 937-255-3636 x4643 (DSN 785-3636, x4643), email = Jeffrey.Bons@afit.af.mil

BRIDGMAN, CHARLES J., Professor Emeritus of Nuclear Engineering, Dept of Engineering Physics, (AFIT/ENP); BS, United States Naval Academy, 1952; MS, North Carolina State University, 1958; PhD, North Carolina State University, 1963. Dr. Bridgman's interest's center around nuclear weapon effects and military nuclear power applications. He has been associated with nuclear weapon defense since 1952. He was a member of the first military team to be operational on the H-bomb. His current research interest is nuclear weapon fallout modeling. He is the author of numerous technical articles in a wide variety of journals. In his 38 years on the AFIT faculty, he has chaired over 120 MS theses and PhD dissertations. He has received several awards including Tau Beta Pi Teacher of the Year and the Gage H. Crocker Outstanding Professor award. Dr. Bridgman is a Fellow of the American Nuclear Society. Tel. 937-255-3636, x4679 (DSN 785-3636, x4679), email = Charles.Bridgman@afit.af.mil

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BROWN, WILLIAM M., Professor of Electrical and Computer Engineering, Dept of Electrical and Computer Engineering (AFIT/ENG); BSEE, West Virginia University, 1952; MSE., 1955, Dr. Eng., The John Hopkins University, 1957. Dr. Brown has over forty years of varied experience in research, teaching, management, and administration. He was the founder and President for 24 years of the Environmental Research Institute of Michigan, prior to which he was a Professor of Electrical and Computer Engineering at the University of Michigan. His research and teaching experience is extensive in remote sensor systems, random processes, and information theory. He has served as a member of the Air Force Scientific Advisory Board and the Army Science Board. Dr. Brown is a Fellow of the Institute of Electrical and Electronic Engineers, and a member of the National Academy of Engineering. Tel. 937-255-3636, x4612 (DSN 785-3636, x4612), email = William.Brown@afit.af.mil

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CHAN, YUPO, Professor of Operations Research; Dept of Operational Sciences (AFIT/ENS); BS, Massachusetts Institute of Technology, 1967; MS, Massachusetts Institute of Technology, 1969; PhD, Massachusetts Institute of Technology, 1972. Dr. Chan's interests include transportation systems analysis, networks and combinatorial optimization, spatial-temporal analysis, traffic forecasting, multicriteria decision making, and technology assessment. He is the author of the book, "Facility Location Transportation and Land Use: Multicriteria Analysis of Spatial-Temporal Information" and also of 45 refereed publications. Dr Chan was a Congressional fellow at the office of Technology Assessment (1979-1980). He is listed in Who's Who in Aviation and Space Technology American Men and Women of Science, Who's Who in the East (among others), and is a Fellow of the American Society of Civil Engineers. Tel. 937-255-6565, x4331 (DSN 785-6565, x4331), email = Yupo.Chan@afit.af.mil

CHILTON, LAWRENCE K., Lt Col, Assistant Professor of Mathematics, Dept of Mathematics and Statistics, (AFIT/ENC); BA, University of California at San Diego, 1981; MS, University of Illinois at Urbana-Champaign, 1988; PhD, University of Maryland, Baltimore, 1997. Lt Col Chilton's interests include finite element analysis, h- and p- refinement, linear and nonlinear elasticity, mixed methods for nearly incompressible materials, computational electromagnetics. His recent papers have been on locking free mixed methods, mixed methods for geometrically nonlinear elasticity, and mixed methods on curvilinear elements. Tel. 937-255-3636, x4523 (DSN 785-3636, x4523), email = Lawrence.Chilton@afit.af.mil

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3.6 DOCTORAL DISSERTATIONS

Maj Scott D. Berger, "Dual Channel Matched Filtering and Space-Time Adaptive Processing," (AFIT/DS/ENG/99J-04), Faculty Advisor: Welsh, Sponsor: AFRL/SNRT

Maj J. Mark DelGrande, "Positive Anisotropic Group Scattering Cross Sections For Radiation Transport," (AFIT/DS/ENP/99-03), Faculty Advisor: Mathews, Sponsor: DTRA/NSN

Maj Donald E. Duckro, "Multiple Comparison Pruning of Neural Networks," (AFIT/DS/ENC/99S-02), Faculty Advisor: Quinn, Sponsor: DAGSI

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Capt John G. Keller, "SCAN-IT: A Computer Vision Model Motivated by Human Physiology and Behavior," (AFIT/DS/ENG/99J-03), Faculty Advisor: Rogers, Sponsor: AFRL/IFEC

Claudia V. Kropas-Hughes, "Image Fusion Using Autoassociative-Heteroassociative Neural Networks," (AFIT/DS/ENG/99J-06), Faculty Advisor: Rogers, Sponsor: AFRL/MLMR

Capt James P. Lake, "Flow Separation on a Turbine Blade in Cascade at Low Reynolds Number," (AFIT/DS/ENY/99-01), Faculty Advisor: King, Sponsor: AFRL/PRTT

Maj Robert E. Marmelstein, "Evolving Compact Decision Rule Sets," (AFIT/DS/ENG/99J-05), Faculty Advisor: Lamont, Sponsor: AFRL/IFTA

Capt Rodney L. Miller, "Development of a Discrete Ordinates Code System For Unstructured Meshes of Tetrahedral Cells, with Serial and Parallel Implementations," (AFIT/DS/ENP/98-02), Advisor: Mathews, Sponsor: SA-ALC/NWIC

Capt Robert S. Pope, "Collisional Effects in the Absorption Spectra of the Oxygen A Band and Nitric Oxide Fundamental Band," (AFIT/DS/ENP/98-03); Faculty Advisor: Wolf; Sponsor: AFRL/VSBM

David M. Reineke, "Estimation and Goodness-of-Fit in the Case of Randomly Censored Lifetime Data," (AFIT/DS/ENC/99-01), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

Capt Thomas M. Schorsch, "Formal Representation and Application of Software Design Information," (AFIT/DS/ENG/99S-08), Faculty Advisor: Hartrum, Sponsor: AFRL/IFTD

Capt David A. Van Veldhuizen, "Multiobjective Evolutionary Algorithms: Classifications, Analyses, and New Innovations," (AFIT/DS/ENG/99J-01), Faculty Advisor: Lamont, Sponsor: AFRL/SNAT

Maj Frank C. D. Young, "Timed Safety Automata and Logic Conformance," (AFIT/DS/ENG/99J-02), Faculty Advisor: Hartrum, Sponsor: AFRL/IFTA

3.7 MASTERS' THESES BY PROGRAM

AERONAUTICAL ENGINEERING

Capt M.J. Chapa, "A Nonlinear Pre-Filter To Prevent Departure And/Or Pilot-Induced Oscillations Due To Actuator Rate Limiting," (AFIT/GAE/ENY/99M-01), Faculty Advisor: Liebst, Sponsor: AFRL/VAAD

Capt D.S. Conley, "Fatigue Response of Repaired Thick Aluminum Panels With Bondline Flaws," (AFIT/GAE/ENY/99M-03), Faculty Advisor: Mall, Sponsor: AFRL/VASE

2d Lt J.M. Corneille, "Wind Tunnel Investigation Of Joined Wing Configuration," (AFIT/GAE/ENY/99J-02), Faculty Advisor: Franke, Sponsor: AFRL/MNAV

1st Lt C.J. Davis, "Solving An Inverse Control Problem Using Predictive Methods," (AFIT/GAE/ENY/99M-05), Faculty Advisor: Heise, Sponsor: AFRL/VAAD

Capt F.L. Dement, "Effects Of Pressure Gradients on Turbulent Boundary Layer Flow Over a Flat Plate With Riblets," (AFIT/GAE/ENY/99M-09), Faculty Advisor: King, Sponsor: AFRL/PRTT

Capt R.G. Glassco, "Closely Supervised Reactive Control Of An Uninhabited Aerial Vehicle," (AFIT/GAE/ENY/99J-01), Faculty Advisor: Spenny, Sponsor: AFRL/HEC

1st Lt A.G. Harris, "Robust Eigenstructure Assignment Using Positive Definite Output Feedback Control," (AFIT/GAE/ENY/99M-06), Faculty Advisor: Liebst, Sponsor: AFRL/VSOC

2d Lt O.A. Powell, "Heat Transfer To The Inclined Trailing Wall Of An Open Cavity," (AFIT/GAE/ENY/99M-07), Faculty Advisor: Bons, Sponsor: AFRL/PRSS

Capt S.M. Spottswood, "Progressive Failure Analysis Of Composite Panels," (AFIT/GAE/ENY/99M-08), Faculty Advisor: Palazotto, Sponsor: AFOSR/NA

Capt B.W. St Germain, "Tip Vortex And Crenulation Effects In A Compressor Cascade With Moving Endwall," (AFIT/GAE/ENY/99M-02), Faculty Advisor: King, Sponsor: AFRL/PRTF

APPLIED PHYSICS

Capt Brad L. Beatty, "Analysis of a Simple Model of the Accumulation and Depletion of Fuel Radionuclides in Selected Nuclear Reactors", AFIT/GAP/ENP/96D-2, (Completed 8 Mar 1999) Advisor: Mathews, Sponsor: AFTAC/TMAR

Capt Barry Behnken, "Kinetic Model of a Space-Based BR Laser Pumped by Solar Photolysis of IBr", (AFIT/GAP/ENP/99M-01), Faculty Advisor: Perram, Sponsor: AFRL/DEL

Capt Jay Foil, "Use of Diffuse Reflectance Spectroscopy to Determine Desorption Coefficients of Trichloroethylene from Powdered Soils," (AFIT/GAP/ENP/99M-02), Faculty Advisor: Wolf

Capt David Gerts, "Characterization of the Double Scatter Spectrum in Multiplexed Compton Scatter Tomography," (AFIT/GAP/ENP/99M-03), Faculty Advisor: Martin, Sponsor: AFRL/MLLP

Capt Craig F. Lamarche, "Performance Evaluation of the Nuclear Weapon (NWP) Source Model for the Hazard Prediction and Assessment Capability (HPAC) Code," (AFIT/GAP/ENP/99S-01), Faculty Advisor: Jodoin, Sponsor: DTRA/CP

Capt Kelly Law, "Validation of the Gallagher Protonospheric Model," (AFIT/GAP/ENP/99M-04), Faculty Advisor: Goldizen, Sponsor: AFRL/VS

2d Lt Christian Morath, "Electrical Characterization of Ion Implanted 4H-Silicon Carbide," (AFIT/GAP/ENP/99M-05), Faculty Advisor: Yeo, Sponsor: AFRL/MLPO

Capt Michael J. Murphy, "Modeling Four-Component Uranium Gaseous Diffusion Enrichment Cascades," (AFIT/GAP/ENP/99J-01), Advisor: Mathews

2d Lt T.A. Niday, "Inelastic Scattering Matrix Elements for the Collision $B(^2P_{1/2}) + H_2(j) \rightarrow B(^2P_{3/2}) + H_2(j)$," (AFIT/GAP/ENP/99M-06), Faculty Advisor: Weeks, Sponsor: AFOSR/NL

Capt S.J. Novotny, "Band Structure Anisotropy in Semiconductor Quantum Wells," (AFIT/GAP/ENP/99M-07), Faculty Advisor: Weeks, Sponsor: AFRL/DELS

1st Lt Dennis Rand, "Characterization of Weathering in Uranium Oxide Particles by Raman Photoluminescence and Infrared Spectroscopy," (AFIT/GAP/ENP/99M-08), Faculty Advisor: Martin, Sponsor: AFTAC/TMA

1st Lt Blake Rodgers, "Laser Beam Combining and Cleanup Via Stimulated Brillouin Scattering in Multimode Optical Fibers," (AFIT/GAP/ENP/99M-09), Faculty Advisor: Roh, Sponsor: AFRL/DELS

Capt Marc Sands, "An Investigation into the Noninvasive Assessment of Bone Density Using Multiplexed Compton Scattered Tomography," (AFIT/GAP/ENP/99M-10), Faculty Advisor: Martin, 74th Med Group Wright Patterson Medical Center

Capt Scott H. Sinkular, "Dose Rate Estimates for Reprocessing Spent Nuclear Fuel," (AFIT/GAP/ENP/99M-11), Advisor: Mathews

Capt Brian Smith, "A Continuous Wave Atomic Bromine Laser Produced by Photolysis of Iodine Monobromide," (AFIT/GAP/ENP/99J-12), Faculty Advisor: Perram, Sponsor: AFRL/DEL

Capt Christopher Smithtro, "Numerical Solutions to the Two-Dimensional Boltzmann Equation," (AFIT/GAP/ENP/99J-13), Faculty Advisor: Bailey, Sponsor: AFRL/PR

Capt Frank Tersigni, "Space Charge Structure of a Glow Discharge in the Presence of Longitudinal Inhomogeneity," (AFIT/GAP/ENP/99J-14), Faculty Advisor: Bailey, Sponsor: AFRL/PR

Capt Shannon Walker, "Double Layer Effects on Shock Wave Propagation," (AFIT/GAP/ENP/99J-15), Faculty Advisor: Bailey, Sponsor: AFRL/PR

2d Lt Janine Wiggins, "Optimization of a Multilayer Photothermal Sensor for Infrared Spectroscopy," (AFIT/GAP/ENP/99J-16), Faculty Advisor: Burggraf, Sponsor: HQ CBDCOM/SCBRD

Capt Mark Wittig, "Implementation of a Two-Dimensional Hydrodynamics Shock Code Based Upon the Weighted Average Flux Method," (AFIT/GAP/ENP/99J-01), Faculty Advisor: Mathews, Sponsor: DTRA

ASTRONAUTICAL ENGINEERING

Capt G.A. Leisman & 1st Lt A.D. Wallen, "Design And Analysis Of On-Orbit Servicing Architectures For The Global Positioning System Constellation," (AFIT/GA/GOR/99M-01), Faculty Advisor: Kramer, Sponsor: SMC/CZS

Capt S.P. Williams, "Space Maneuver Vehicle Orbital Mission Planner: Development Of Application And Analysis Of On-Demand Maneuvering Ability," (AFIT/GA/ENY/99M-02), Faculty Advisor: Wiesel, Sponsor: AFRL/VSDV

COMPUTER ENGINEERING

1st Lt T. Altunbasak, "A Trade-Off Analysis For Quality Of Service In Real-Time Voice Over IP," (AFIT/GCE/ENG/99M-01), Faculty Advisor: Gunsch, Sponsor: AFIT/ENG

Capt R.H. Broyles, "Performance Analysis of TCP Enhancements in Satellite Data Networks," (AFIT/GCE/ENG/99M-02), Faculty Advisor: Raines, Sponsor: NASA

Capt K.J. Cardinale, "A Constructive Induction Approach to Computer Immunology," (AFIT/GCE/ENG/99M-03), Faculty Advisor: Gunsch, Sponsor: AFOSR/MSS

2d Lt K.A. Ercakar, "A Performance Analysis of a Low Earth Orbit Satellite System," (AFIT/GCE/ENG/99J-01), Faculty Advisor: Raines, Sponsor: AFIT/ENG

Capt S.R. Pratt, "A Performance Analysis of Dynamics Routing Algorithms in an Iridium-Like Low Earth Orbit Satellite System," (AFIT/GCE/ENG/99M-04), Faculty Advisor: Raines, Sponsor: AFRL/IFG

1st Lt A.G. Valente, "Analysis of N-Tier Architecture Applied to Distributed Database Systems," (AFIT/GCE/ENG/99J-04), Faculty Advisor: Lamont, Sponsor: Brazilian Air Force

COMPUTER SCIENCE

Capt G.L. Anderson, "An Interactive Tool for Refining Software Specifications from a Formal Domain Model," (AFIT/GCS/ENG/99M-01), Faculty Advisor: Hartrum, Sponsor: AFRL/IFTD

1st Lt E. Colonese, "Methodology for Integrating the Scenario Database of Simulation Systems," (AFIT/GCS/ENG/99J-03), Faculty Advisor: Hartrum, Sponsor: AFRL/SNZW

Maj K.E. Crowe, "A Comparative Analysis of the Iridium and Globalstar Satellite System Transmission Paths," (AFIT/GSO/ENG/99M-01), Faculty Advisor: Raines, Sponsor: Dept of Defense, Australia

Capt K.R. Deerman, "Protein Structure Prediction Using Parallel Linkage Investigating Genetic Algorithms," (AFIT/GCS/ENG/99M-03), Faculty Advisor: Lamont, Sponsor: AFRL/MLPJ

Capt R.A. Favorito & 1st Lt D.M. McIllece, "Analysis of USAF Battlelab's Communication Infrastructure Over Various Protocols," (AFIT/GCS/ENG/99M-04), Faculty Advisor: Raines, Sponsor: HQ USAF/XORPB

1st Lt R.A. Flood, "A Java Based Human Computer Interface For A UAV Decision Support Tool Using Conformal Mapping," (AFIT/GCS/ENS/99M-01), Faculty Advisor: Bailey, Sponsor: UAV Battlelab

Capt C.J. Fogle, "Strategies for Steganalysis of Bitmap Graphics Files," (AFIT/GCS/ENG/99M-05), Faculty Advisor: Potoczny, Sponsor: NAIC/TAC

1st Lt L.P. Hammack, "Parallel Data Mining With The Message Passing Interface Standard on Clusters Of Personal Computers," (AFIT/GCS/ENG/99M-06), Faculty Advisor: Lamont, Sponsor: AFRL/IFTA

2d Lt G.M. Harrison, "A Real-Time Airdrop Visualization in a Virtual Environment," (AFIT/GCS/ENG/99M-07), Faculty Advisor: Jacobs, Sponsor: ASC/YC

Capt R.H. Hartz, "Methodology for Application Design Using Information Dissemination and Active Database Technologies," (AFIT/GCS/ENG/99M-08), Faculty Advisor: Potoczny, Sponsor: AFRL/SNAA

2d Lt J.M. Hemmes, "Modeling Chemical Absorption Through Membranes," (AFIT/GCS/ENG/99M-01), Faculty Advisor: Quinn, Sponsor: AFRL/HEST

Maj J.K. Joo, "The Simulation Modeling and Analysis of Wireless Local Area Networks Supporting the IEEE 802.11 Standard," (AFIT/GCS/ENG/98D-01), Faculty Advisor: Raines, Sponsor: AFRL/IFSD

1st Lt J.A. Kissack, "Transforming Aggregate Object-Objected Formal Specifications To Code," (AFIT/GCS/ENG/99M-09), Faculty Advisor: Hartrum, Sponsor: AFRL/IFTD

Capt A.W. Learn, "Target Pose Estimation from Radar Data Using Adaptive Networks," (AFIT/GCS/ENG/99M-10), Faculty Advisor: Gustafson, Sponsor: AFRL/SNAT

Capt T. Lee, "A Web-based Prototype System for AFIT Edplan Administration," (AFIT/GCS/ENG/98D-02), Faculty Advisor: Talbert, Sponsor: AFIT/RRD

Capt D.R. Lomsdalen, "A Modeling and Simulation Approach To Analyze The Workload Analysis Of Network Router Access List Growth," (AFIT/GCS/ENG/99M-11), Faculty Advisor: Gunsch, Sponsor: DISA/JEEBC

Capt C.G. Marks, "Extensible Multi-Agent System For Heterogeneous Database Mining And Verification Association Rule Mining and Unification," (AFIT/GCS/ENG/99M-12), Faculty Advisor: DeLoach, Sponsor: AFIT/ENG

Capt D.L. Moraes, "Transforming COBOL Legacy Software To A Generic Imperative Model," (AFIT/GCS/ENG/99M-22), Faculty Advisor: Graham, Sponsor: AFRL/IFTD

1st Lt P.A. Noe, "A Structured Approach to Software Tool Integration," (AFIT/GCS/ENG/99M-14), Faculty Advisor: Hartrum, Sponsor: AFRL/IFTD

2d Lt H. M. O'Donnell, "A Constructive Induction Approach to Computer Immunology," (AFIT/GCS/ENG/99M-02), Faculty Advisor: Gunsch, Sponsor: AFOSR/DMSS

Capt T.I. Page, "Incorporating Scene Mosaics As Visual Indexes Into UAV Video Imagery DataBases," (AFIT/GCS/ENG/99M-16), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC

1st Lt B.L. Pyburn, "Analysis of the Applicability of Video Segmentation to Unmanned Aerial Vehicle Surveillance Video," (AFIT/GCS/ENG/99M-17), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC

Capt S. Rodrigues, "COBOL Reengineering Using the Parameter-Based Object Identification (PBOI) Methodology," (AFIT/GCS/ENG/99J-02), Faculty Advisor: Graham, Sponsor: AFRL/IFTD

Capt L.F. Silva, "Parallel Digital Asignal Processing On a Network of Personal Computers Case Study: Spacetime Adaptive Processing," (AFIT/GCS/ENG/99J-01), Faculty Advisor: Lamont, Sponsor: AFIT/ENG

Capt P.G. Stratton, "A Metrics-Based Analysis Of Interface Usability Improvements By Applying Intelligent Agents," (AFIT/GCS/ENG/99M-18), Faculty Advisor: DeLoach, Sponsor: AFRL/SNZW

2d Lt T.W. Tankersley, "Generating Executable Code from Formal Specifications of Primitive Objects," (AFIT/GCS/ENG/99M-19), Faculty Advisor: Graham, Sponsor: AFRL/IFTD

Capt R.J. Weber, "Extracting A Common Object Model for DoD Simulation Systems," (AFIT/GCS/ENG/99M-20), Faculty Advisor: Potoczny, Sponsor: AFRL/SNZW

ELECTRICAL ENGINEERING

Capt D.J. Barnhart, "An Improved Asynchronous Implementation Of A Fast Fourier Transform Architecture For Space Applications," (AFIT/GE/ENG/99M-01), Faculty Advisor: Brothers, Sponsor: AFRL/VSSSE

Capt C.A. Bohn, "Asymmetric Load Balancing On A Heterogeneous Cluster Of PCs," (AFIT/GE/ENG/99M-02), Faculty Advisor: Lamont, Sponsor: ASC/HP

Capt S.H. Chastain, "Integrated GPS/INS Precision Approach Landing With M3AE Interference Avoidance," (AFIT/GE/ENG/99M-03), Faculty Advisor: Miller, Sponsor: AFIT/ENG

Capt J.G. Cochran, "TE Scattering From Bubbles In RAM," (AFIT/GE/ENG/99M-04), Faculty Advisor: Collins, Sponsor: ASC/ENAD

Mr. C.R. Colon, "An Efficient GPS Position Determination Algorithm," (AFIT/GE/ENG/99M-33), Faculty Advisor: Pachter, Sponsor: AFRL/VAAD

Capt M.D. Craig, "An Empirical Prediction Model Of Tolerance Effects On Frequency Selective Surfaces Using The Monte Carlo Method," (AFIT/GE/ENG/99M-05), Faculty Advisor: Collins, Sponsor: AFRL/XPN

1st Lt B.J. Crothers, "Radar Cross-Section Enhancement Of Simple Targets," (AFIT/GE/ENG/99M-06), Faculty Advisor: Pyati, Sponsor: AFRL/XPN

Capt R.L. Eigel, "Radar Cross-Section (RCS) Characterization of Complex Objects," (AFIT/GE/ENG/99J-01), Faculty Advisor: Terzuoli, Sponsor: ASC/ENAD

Capt A.J. Feltman, "Trade-off Analysis Of Communications Capabilities Of Intersatellite Links," (AFIT/GE/ENG/99M-08), Faculty Advisor: Raines, Sponsor: SMC/XRI

2d Lt K.A. Fisher, "Multiple Model Adaptive Estimation Using Filter Spawning," (AFIT/GE/ENG/99M-09), Faculty Advisor: Maybeck, Sponsor: AFRL/VACC

Capt A.P. Ford, "Computation Of Scattering From Bodies Of Revolution Using An Entire Domain Basis Implementation Of The Moment Method," (AFIT/GE/ENG/99M-10), Faculty Advisor: Collins, Sponsor: AFRL/XPN

Capt A.M. Gillman, "Non Co-Operative Detection Of LPI/LPD Signals Using Cyclic Spectral Analysis," (AFIT/GE/ENG/99M-11), Faculty Advisor: Temple, Sponsor: AFRL/SNZW

Capt S.R. Graham, "An Immersive User Interface For The Cave Automatic Virtual Environment," (AFIT/GE/ENG/99M-12), Faculty Advisor: Jacobs, Sponsor: ASC/YCA

1st Lt B.M. Huether, "Optimal Wavelet Denoising for High Range Resolution Radar Classification," (AFIT/GE/ENG/99M-14), Faculty Advisor: Gustafson, Sponsor: AFRL/SNZT

Maj K.D. Johnston, "Analysis of Radio Frequency Interference Effects On a Modern Code GPS Receiver," (AFIT/GSO/ENG/99M-02), Faculty Advisor: Miller, Sponsor: CFB Winnipeg

2d Lt J.M. Kos, "Graphical User Interface And Microprocessor Control Enhancement Of A Pseudorandom Code Generator," (AFIT/GE/ENG/99M-15), Faculty Advisor: Temple, Sponsor: AFRL/SNRW

Capt A. MacDonald, "Classification Of High Range Resolution Radar Returns Using Hidden Markov and Gaussian Mixture Models," (AFIT/GE/ENG/99M-16), Faculty Advisor: Rogers, Sponsor: AFRL/SNZT

2d Lt R. Mediavilla, "Terrain Backscattering Coefficient Generator," (AFIT/GE/ENG/99M-18), Faculty Advisor: Pyati, Sponsor: AFRL/SNAS

Capt B.J. Mortenson, "The Effect Of Registration Errors On Tracking In A Networked Radar System," (AFIT/GE/ENG/99M-19), Faculty Advisor: Gustafson, Sponsor: NAIC/TAER

Capt R.C. Novack, "High Range Resolution (HRR) Profiling Using Phase-Coded, Stepped-Frequency Radar Waveforms," (AFIT/GE/ENG/99M-20), Faculty Advisor: Temple, Sponsor: AFRL/SNAS

Capt W.N. O'Connor, "Low Grazing Angle Terrain Backscattering Coefficient Generator," (AFIT/GE/ENG/99M-21), Faculty Advisor: Pyati, Sponsor: AFRL/SNAS

2d Lt D.J. Petrovich, "Structural Emergence and the Collaborative Behavior of Nano-Satellites," (AFIT/GE/ENG/99M-22), Faculty Advisor: Gustafson, Sponsor: AFRL/ATT

Capt T.S. Pittman, "A Climatology-Based Model For Long-Term Prediction Of Radar Beam Refraction," (AFIT/GE/ENG/99M-23), Faculty Advisor: Pyati, Sponsor: NAIC/TAER

Capt A.W. Proud, "Close Formation Flight Control," (AFIT/GE/ENG/99M-24), Faculty Advisor: Pachter, Sponsor: AFRL/VAAD

Capt P.C. Rounsavall, "Modulation Of Electrostatic Microelectromechanical Mirrors Using A CMOS Controller," (AFIT/GE/ENG/99M-25), Faculty Advisor: Brothers, Sponsor: AFRL/VSSE

Capt K.C. Schloer, "Antenna Gain Enhancement Using A Photonic Band Gap Reflector," (AFIT/GE/ENG/99M-26), Faculty Advisor: Collins, Sponsor: AFRL/SNRP

2d Lt J.P. Sillence, "Loop Gain Estimation For Adaptive Control," (AFIT/GE/ENG/99M-27), Faculty Advisor: Pachter, Sponsor: AFRL/VAAD

2d Lt P.J. Swackhammer, "Design And Simulation Of A Multiple Access Transform Domain Communication System," (AFIT/GE/ENG/99M-28), Faculty Advisor: Temple, Sponsor: AFRL/SNRW

Capt T.S. Utton, "Ultra-Wideband Tem Horns, Transient Arrays and Exponential Curves: A FDTD Look," (AFIT/GE/ENG/99M-29), Faculty Advisor: Terzuoli, Sponsor: AFRL/DEHP

2d Lt B.J. Vanek, "GPS Signal Offset Detection and Noise Strength Estimation In A Parallel Kalman Filter Algorithm," (AFIT/GE/ENG/99M-30), Faculty Advisor: Maybeck, Sponsor: AFRL/SNAR

Capt P.N. Villanueva, "Application Of The Finite Element Method To The Scattering Of A Two-Dimensional, Semi-Infinite Periodic Structure," (AFIT/GE/ENG/99M-31), Faculty Advisor: Collins, Sponsor: AFRL/XPN

Capt B.J. Young, "An Integrated Synthetic Aperture Radar/Global Positioning System/Inertial Navigation System For Target Geolocation Improvement," (AFIT/GE/ENG/99M-32), Faculty Advisor: M.M. Miller, Sponsor: ASC/RAP

ELECTRO OPTICS

Capt Bradley Rennich, "Active Multispectral Band Selection and Reflectance Measurement System," (AFIT/GEO/ENP/99M-01), Faculty Advisor: Roh, Sponsor: AFRL/SNJ

ENGINEERING AND ENVIRONMENTAL MANAGEMENT

Capt D.J. Anason, "Exploring the Management of Outsourcing and the Determination of Civil Engineering Minimum Manning Numbers in Order to Optimize Air Force Benefits," (AFIT/GEE/ENV/99M-01), Faculty Advisor: Shelley, Sponsor: HQ USAF/ILEIO

Capt S.L. Anason, "Cost-Benefit Analysis of Cosolvent Flushing to Treat NAPL's at Contaminated Sites," (AFIT/GEE/ENV/99M-02), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE

Capt B.D. Benter, "Substrate Availability in Solid Waste Landfills," (AFIT/GEE/ENV/99M-03), Faculty Advisor: Nixon and Shelley, Sponsor: HQ AFCEE/ERC and HQ AFMC/CEVR

Capt B.W. Burke, "Biodegradation Of Aircraft Deicing Fluid Components In Soil," (AFIT/GEE/ENV/99M-04), Faculty Advisor: Bleckmann, Sponsor: AFRL/MLSE

Capt A.L. Gepner, Jr., "Textual Analysis of Environmental Compliance Assessment Program Findings," (AFIT/GEE/ENV/99M-05), Faculty Advisor: Lofgren

2d Lt C.A. Garrett, "Optimization of In Situ Aerobic Cometabolic Bioremediation Of Trichloroethylene-Contaminated Groundwater Using A Parallel Genetic Algorithm," (AFIT/GEE/ENG/99M-02), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE

Capt J.M. Griffin, "Expeditious Method For Estimating Cleanup Costs At Department of Defense Installations in Korea," (AFIT/GEE/ENV/99M-06), Faculty Advisor: Goltz, Sponsor: INSS

Capt D.H. Hartman, "Expeditious Methods for Site Characterization and Risk Assessment at Department of Defense Hazardous Waste Sites in the Republic of Korea," (AFIT/GEE/ENV/99M-07), Faculty Advisor: Goltz, Sponsor: INSS

Capt E.L. Hill, "The Determinants of Locational Choice for Air Force Military Renters: Implication for Policy," (AFIT/GEE/ENV/99M-08), Faculty Advisor: Lofgren, Sponsor: HQ USAF/ILEH

Capt T.W. Johannes, "Optimal Pulsed Pumping Schedule Using Calculus of Variation Methodology," (AFIT/GEE/ENC/99M-01), Faculty Advisor: Oxley, Sponsor: HQ AFCEE/ERC

Capt M.J. Johnson, "Individual Housing Choices Among Air Force Members," (AFIT/GEE/ENV/99M-10), Faculty Advisor: Nixon, Sponsor: USAF/ILEH

Capt N.W. Kassel, "Development Of Site Characterization Simulator," (AFIT/GEE/ENG/99M-01), Faculty Advisor: Goltz, Sponsor: AFIT/CEV

1st Lt D.L. Kellner, "Sorption Of The Aircraft Deicing Fluid Component Methyl-Benzotriazole In Soil," (AFIT/GEE/ENV/99M-11), Faculty Advisor: Bleckmann, Sponsor: AFRL/MLQ

1st Lt J.R. Palmer, "Concept Design And Optimization Of A MSW Material Recovery System," (AFIT/GEE/ENV/99M-12), Faculty Advisor: Nixon, Sponsor: 52 CES/CEV

Capt C.P. Roberts, "Environmental Management Strategies In Public Sector Organizations," (AFIT/GEE/ENV/99M-13), Faculty Advisor: Lofgren, Sponsor: HQ ACC/CEV

Capt J.S. Romasz, "Analysis of Cost Growth In U.S. Air Force Base Support Function Contracts," (AFIT/GEE/ENV/99M-14), Faculty Advisor: Nixon, Sponsor: HQ USAF/IELIO

Capt S.C. Thompson, "Decision Analysis Methodology To Evaluate Organization Strategies For The Civil Engineer Operations Flight," (AFIT/GEE/ENV/99M-15), Faculty Advisor: Lofgren, Sponsor: 314 TRW/CES

1st Lt D.D. Veerkamp, "Natural Attenuation Of Chlorinated Ethenes By Anaerobic Reductive Dechlorination Coupled With Aerobic Cometabolism," (AFIT/GEE/ENV/99M-16), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE

METEOROLOGY

Capt Mark Adair, "A Refinement and Cross-Validation of the Special Sensor Microwave Imager (SSM/I) Calibration-Validation (LV), (AFIT/GM/ENP/99M-01), Faculty Advisor: Goldizen, Sponsor: HQ AFWA/DNXM

Capt David Bacot, "Visualizing the Impact of Multivariate Meteorological Input Error on Electro-Optical Tactical Decision and Output," (AFIT/GM/ENP/99M-02), Faculty Advisor: Walters, Sponsor: AFRL/VSBE

Capt Christopher C. Cox, "A Comparison of Horizontal Cloud-to-Ground Lightning Flash Distance Using Weather Surveillance Radar and the Distance Between Successive Flashes Method," (AFIT/GM/ENP/99M-03); Faculty Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt John Crane, "Improving Cape Canaveral's Next-Day Thunderstorms Forecasting Using a Meso-ETA Model-Based Index," (AFIT/GM/ENP/99M-04), Faculty Advisor: Walters, Sponsor: 45 WS/SYR

1st Lt Michael W. Engel, "Evaluation of Barnes' Method and Kriging for Estimating the Low Level Wind Field," (AFIT/GM/ENP/99M-05); Faculty Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

Capt James Everitt, "An Improved Thunderstorm Forecast Index for Cape Canaveral Florida," (AFIT/GM/ENP/99M-06), Faculty Advisor: Miner, Sponsor: 45WS/SYR

Capt Robert Hauser, "Survey of Military Applications for Fourier-Transform Infrared (FTIR) Spectroscopy," (AFIT/GM/ENP/99M-07), Faculty Advisor: Perram, Sponsor: 88th WX Squadron

Capt Darrell Kerr, "A Validation Study of Cloud Scene Simulation Model Temporal Performance," (AFIT/GM/ENP/99M-08), Faculty Advisor: Walters, Sponsor: 88th WX Squadron/WEA

1st Lt Robert Russ, "Estimating the Height of the Planetary Boundary Layer for Diffusion-Transport Atmospheric Models: A Four Algorithm," (AFIT/GM/ENP/99M-09), Faculty Advisor: Walters

Capt Travis A. Steen, "Forecasting Downdraft Wind Speeds Associated with Airmass Thunderstorms for Peterson Air Force Base, Colorado, Using the WSR-88D," (AFIT/GM/ENP/99M-10); Faculty Advisor: Miner; Sponsor: HQ AFSPC/DORW

Capt Steven J. Storch, "Predicting Launch Pad Winds at the Kennedy Space Center with a Neural Network Model," (AFIT/GM/ENP/99M-11); Faculty Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt Gerald Sullivan, "Using the WSR-88D to Forecast Downburst Winds at Cape Canaveral Air Station and the Kennedy Space Center," (AFIT/GM/ENP/99M-12), Faculty Advisor: Walters, Sponsor: 45th WS/SYR

OPERATIONAL ANALYSIS

1st Lt C. B. Bassham, "Visualizing Early-Stage Breast Cancer Tumors in a Mammographic Environment Through a 3-Dimensional Mathematical Model," (AFIT/GOA/ENS/99M-01), Faculty Advisor: Bauer, Sponsor: AFRL

Capt K. S. Bellamy, "Analysis of a Non-Trivial Queuing Network," (AFIT/GOA/ENS/99M-02), Faculty Advisor: Murdock & Reid, Sponsor: NSA

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2d Lt D. T. Mills, "Two-Stage Stochastic Linear Programming with Recourse: A Characterization of Local Regions using Response Surface Methodology," (AFIT/GOR/ENS/99M-11), Faculty Advisor: Bailey, Sponsor: AFIT/ENS

1st Lt S. L. Naylor, "Portfolio Selection of Innovative Technologies Via Life Cycle Cost Modeling," (AFIT/GOR/ENS/99M-12), Faculty Advisor: Deckro/Moore, Sponsor: AFIT/ENS

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Maj J.K. Joo, "The Simulation Modeling and Analysis of Wireless Local Area Networks Supporting the IEEE 802.11 Standard," (AFIT/GCS/ENG/98D-01), Faculty Advisor: Raines, Sponsor: AFRL/IFSD

Capt Gregory G. Karahalios, "Whole Spacecraft Vibration Isolation," (AFIT/GSO/ENY/99M-5), Faculty Advisor: Agnes, Sponsor: AFRL/VSDV

1st Lt D.L. Kellner, "Sorption Of The Aircraft Deicing Fluid Component Methyl-Benzotriazole In Soil," (AFIT/GEE/ENV/99M-11), Faculty Advisor: Bleckmann, Sponsor: AFRL/MLQ

1st Lt J.A. Kissack, "Transforming Aggregate Object-Objected Formal Specifications To Code," (AFIT/GCS/ENG/99M-09), Faculty Advisor: Hartrum, Sponsor: AFRL/IFTD

2d Lt J.M. Kos, "Graphical User Interface And Microprocessor Control Enhancement Of A Pseudorandom Code Generator," (AFIT/GE/ENG/99M-15), Faculty Advisor: Temple, Sponsor: AFRL/SNRW

Capt T. I. Laine, "Selection of Psychophysiological Features Across Subjects for Classifying Workload Using Artificial Neural Networks (ANNs)," (AFIT/GOR/ENS/99M-09), Faculty Advisor: Bauer, Sponsor: AFOSR/NL, AFRL/HECP

Capt Kelly Law, "Validation of the Gallagher Protonospheric Model," (AFIT/GAP/ENP/99M-04), Faculty Advisor: Goldizen, Sponsor: AFRL/VS

Capt A.W. Learn, "Target Pose Estimation from Radar Data Using Adaptive Networks," (AFIT/GCS/ENG/99M-10), Faculty Advisor: Gustafson, Sponsor: AFRL/SNAT

Capt A. MacDonald, "Classification Of High Range Resolution Radar Returns Using Hidden Markov and Gaussian Mixture Models," (AFIT/GE/ENG/99M-16), Faculty Advisor: Rogers, Sponsor: AFRL/SNZT

2d Lt R. Mediavilla, "Terrain Backscattering Coefficient Generator," (AFIT/GE/ENG/99M-18), Faculty Advisor: Pyati, Sponsor: AFRL/SNAS

Capt D.L. Moraes, "Transforming COBOL Legacy Software To A Generic Imperative Model," (AFIT/GCS/ENG/99M-22), Faculty Advisor: Graham, Sponsor: AFRL/IFTD

2d Lt Christian Morath, "Electrical Characterization of Ion Implanted 4H-Silicon Carbide," (AFIT/GAP/ENP/99M-05), Faculty Advisor: Yeo, Sponsor: AFRL/MLPO

1st Lt P.A. Noe, "A Structured Approach to Software Tool Integration," (AFIT/GCS/ENG/99M-14), Faculty Advisor: Hartrum, Sponsor: AFRL/IFTD

Capt R.C. Novack, "High Range Resolution (HRR) Profiling Using Phase-Coded, Stepped-Frequency Radar Waveforms," (AFIT/GE/ENG/99M-20), Faculty Advisor: Temple, Sponsor: AFRL/SNAS

Capt S.J. Novotny, "Band Structure Anisotropy in Semiconductor Quantum Wells," (AFIT/GAP/ENP/99M-07), Faculty Advisor: Weeks, Sponsor: AFRL/DELS.

Capt W.N. O'Connor, "Low Grazing Angle Terrain Backscattering Coefficient Generator," (AFIT/GE/ENG/99M-21), Faculty Advisor: Pyati, Sponsor: AFRL/SNAS

Capt T.I. Page, "Incorporating Scene Mosaics As Visual Indexes Into UAV Video Imagery DataBases," (AFIT/GCS/ENG/99M-16), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC

2d Lt D.J. Petrovich, "Structural Emergence and the Collaborative Behavior of Nano-Satellites," (AFIT/GE/ENG/99M-22), Faculty Advisor: Gustafson, Sponsor: AFRL/ATT

2d Lt O.A. Powell, "Heat Transfer To The Inclined Trailing Wall Of An Open Cavity," (AFIT/GAE/ENY/99M-07), Faculty Advisor: Bons, Sponsor: AFRL/PRSS

Capt S.R. Pratt, "A Performance Analysis of Dynamics Routing Algorithms in an Iridium-Like Low Earth Orbit Satellite System," (AFIT/GCE/ENG/99M-04), Faculty Advisor: Raines, Sponsor: AFRL/IFG

Capt A.W. Proud, "Close Formation Flight Control," (AFIT/GE/ENG/99M-24), Faculty Advisor: Pachter, Sponsor: AFRL/VAAD

1st Lt B.L. Pyburn, "Analysis of the Applicability of Video Segmentation to Unmanned Aerial Vehicle Surveillance Video," (AFIT/GCS/ENG/99M-17), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC

Capt Bradley Rennich, "Active Multispectral Band Selection and Reflectance Measurement System," (AFIT/GEO/ENP/99M-01), Faculty Advisor: Roh, Sponsor: AFRL/SNJ

1st Lt Blake Rodgers, "Laser Beam Combining and Cleanup Via Stimulated Brillouin Scattering in Multimode Optical Fibers," (AFIT/GAP/ENP/99M-09), Faculty Advisor: Roh, Sponsor: AFRL/DELS

Capt S. Rodrigues, "COBOL Reengineering Using the Parameter-Based Object Identification (PBOI) Methodology," (AFIT/GCS/ENG/99J-02), Faculty Advisor: Graham, Sponsor: AFRL/IFTD

Capt P.C. Rounsavall, "Modulation Of Electrostatic Microelectromechanical Mirrors Using A CMOS Controller," (AFIT/GE/ENG/99M-25), Faculty Advisor: C. Brothers, Sponsor: AFRL/VSSE

Capt K.C. Schloer, "Antenna Gain Enhancement Using A Photonic Band Gap Reflector," (AFIT/GE/ENG/99M-26), Faculty Advisor: Collins, Sponsor: AFRL/SNRP

2d Lt J.P. Sillence, "Loop Gain Estimation For Adaptive Control," (AFIT/GE/ENG/99M-27), Faculty Advisor: Pachter, Sponsor: AFRL/VAAD

Capt Brian Smith, "A Continuous Wave Atomic Bromine Laser Produced by Photolysis of Iodine Monobromide," (AFIT/GAP/ENP/99J-12), Faculty Advisor: Perram, Sponsor: AFRL/DEL

Capt Christopher Smithtro, "Numerical Solutions to the Two-Dimensional Boltzmann Equation," (AFIT/GAP/ENP/99J-13), Faculty Advisor: Bailey, Sponsor: AFRL/PR

Capt B.W. St Germain, "Tip Vortex And Crenulation Effects In A Compressor Cascade With Moving Endwall," (AFIT/GAE/ENY/99M-02), Faculty Advisor: King, Sponsor: AFRL/PRTF

2d Lt P.J. Swackhammer, "Design And Simulation Of A Multiple Access Transform Domain Communication System," (AFIT/GE/ENG/99M-28), Faculty Advisor: Temple, Sponsor: AFRL/SNRW

Capt P.G. Stratton, "A Metrics-Based Analysis Of Interface Usability Improvements By Applying Intelligent Agents," (AFIT/GCS/ENG/99M-18), Faculty Advisor: DeLoach, Sponsor: AFRL/SNZW

2d Lt T.W. Tankersley, "Generating Executable Code from Formal Specifications of Primitive Objects," (AFIT/GCS/ENG/99M-19), Faculty Advisor: Graham, Sponsor: AFRL/IFTD

Capt Frank Tersigni, "Space Charge Structure of a Glow Discharge in the Presence of Longitudinal Inhomogeneity," (AFIT/GAP/ENP/99J-14), Faculty Advisor: Bailey, Sponsor: AFRL/PR

Capt T.S. Utton, "Ultra-Wideband Tem Horns, Transient Arrays and Exponential Curves: A FDTD Look," (AFIT/GE/ENG/99M-29), Faculty Advisor: Terzuoli, Sponsor: AFRL/DEHP

2d Lt B.J. Vanek, "GPS Signal Offset Detection and Noise Strength Estimation In A Parallel Kalman Filter Algorithm," (AFIT/GE/ENG/99M-30), Faculty Advisor: Maybeck, Sponsor: AFRL/SNAR

1st Lt D.D. Veerkamp, "Natural Attenuation Of Chlorinated Ethenes By Anaerobic Reductive Dechlorination Coupled With Aerobic Cometabolism," (AFIT/GEE/ENV/99M-16), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE

Capt P.N. Villanueva, "Application Of The Finite Element Method To The Scattering Of A Two-Dimensional, Semi-Infinite Periodic Structure," (AFIT/GE/ENG/99M-31), Faculty Advisor: Collins, Sponsor: AFRL/XPN

Capt Shannon Walker, "Double Layer Effects on Shock Wave Propagation," (AFIT/GAP/ENP/99J-15), Faculty Advisor: Bailey, Sponsor: AFRL/PR

Capt R.J. Weber, "Extracting A Common Object Model for DoD Simulation Systems," (AFIT/GCS/ENG/99M-20), Faculty Advisor: Potoczny, Sponsor: AFRL/SNZW

Capt S.P. Williams, "Space Maneuver Vehicle Orbital Mission Planner: Development Of Application And Analysis Of On-Demand Maneuvering Ability," (AFIT/GA/ENY/99M-02), Faculty Advisor: Wiesel, Sponsor: AFRL/VSDV

Capt M. F. Winthrop, "Selection of Best Technologies that Support the Warfighter for Air Vehicles Directorate," (AFIT/GOR/ENS/99M-18), Faculty Advisor: Deckro/Kloeber, Sponsor: AFRL/XP

SPACE AND MISSILE SYSTEMS CENTER

Capt A.J. Feltman, "Trade-off Analysis Of Communications Capabilities Of Intersatellite Links," (AFIT/GE/ENG/99M-08), Faculty Advisor: Raines, Sponsor: SMC/XRI

Capt G.A. Leisman & 1st Lt A.D. Wallen, "Design And Analysis Of On-Orbit Servicing Architectures For The Global Positioning System Constellation," (AFIT/GA/GOR/99M-01), Faculty Advisor: Kramer, Sponsor: SMC/CZS

1st Lt A. D. Wallen, "Design and Analysis of on-Orbit Servicing Architectures for the Global Positioning System Constellation," (AFIT/GOR/ENY/99M-01), Faculty Advisor: Kramer, Sponsor: SMC/CZS

AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER

1st Lt T. Memis, "A New Sequential Goodness-of-Fit Test for the Three-Parameter Weibull Distribution with Known Shape Parameter Value Based on the Skewness and the Q-Statistic GOF Test Statistics," (AFIT/GOR/ENC/99M-01), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

Maj C. H. Park, "A New Sequential Goodness-of-Fit Test for a Family of Two-Parameter Gamma Distributions with Known Shape Based on Skewness and Kurtosis," (AFIT/GOR/ENC/99M-02), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

Maj J. S. Park, "A New Sequential Goodness-of-Fit Test for a Family of Two-Parameter Gamma Distributions with Known Shape Based on Skewness and Q-Statistic," (AFIT/GOR/ENC/99M-03), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

AIR FORCE PERSONNEL OPERATIONS AGENCY

Capt M. P. Gaupp, "Pilot Inventory Complex Adaptive System (PICAS): An Artificial Life Approach to Managing Pilot Retention," (AFIT/GOR/ENS/99M-06), Faculty Advisor: Hill, Sponsor: AFPOA

AIR FORCE SPACE COMMAND

Capt Travis A. Steen, "Forecasting Downdraft Wind Speeds Associated with Airmass Thunderstorms for Peterson Air Force Base, Colorado, Using the WSR-88D," (AFIT/GM/ENP/99M-10); Faculty Advisor: Miner; Sponsor: HQ AFSPC/DORW

SPACE BATTLELAB

Capt M. K. Betts, "Applying Value-Focused Thinking to Eliminating Enemy Satellite Capabilities," (AFIT/GOR/ENS/99M-02), Faculty Advisor: Murdock, Sponsor: Space Battlelab

1st Lt Toby G. Doran, "Toward Development of An Integrated Aerospace Power Doctrine," (AFIT/GSO/ENY/99M-02) Faculty Advisors: Kramer and Murdock, Sponsor: AFSB/XSB

SPACE WARFARE CENTER

Capt F. N. Nelson, "A Validation Assessment of THUNDER 6.5's Intelligence, Surveillance, and Reconnaissance Module," (AFIT/GOR/ENS/99M-13), Faculty Advisor: McIntyre, Sponsor: Space Warfare Center

AIR FORCE TECHNICAL APPLICATIONS CENTER

Capt Brad L. Beatty, "Analysis of a Simple Model of the Accumulation and Depletion of Fuel Radionuclides in Selected Nuclear Reactors", AFIT/GAP/ENP/96D-2, (Completed 8 Mar 1999) Advisor: Mathews, Sponsor: AFTAC/TMAR

Capt Michael J. Murphy, "Modeling Four-Component Uranium Gaseous Diffusion Enrichment Cascades," (AFIT/GAP/ENP/99J-01), Advisor: Mathews, Sponsor: AFTAC

1st Lt Dennis Rand, "Characterization of Weathering in Uranium Oxide Particles by Raman Photoluminescence and Infrared Spectroscopy," (AFIT/GAP/ENP/99M-08), Faculty Advisor: Martin, Sponsor: AFTAC/TMA

1st Lt Robert Russ, "Estimating the Height of the Planetary Boundary Layer for Diffusion-Transport Atmospheric Models: A Four Algorithm," (AFIT/GM/ENP/99M-09), Faculty Advisor: Walters, Sponsor: AFTAC/TKME

Capt Scott H. Sinkular, "Dose Rate Estimates for Reprocessing Spent Nuclear Fuel," (AFIT/GAP/ENP/99M-11), Advisor: Mathews, Sponsor: AFTAC/TMAR

AIR FORCE WEATHER AGENCY

Capt Mark Adair, "A Refinement and Cross-Validation of the Special Sensor Microwave Imager (SSM/I) Calibration-Validation (LV)", (AFIT/GM/ENP/99M-01), Faculty Advisor: Goldizen, Sponsor: HQ AFWA/DNXM

45TH WEATHER SQUADRON (CAPE CANAVERAL/KENNEDY SPACE CENTER)

Capt Christopher C. Cox, "A Comparison of Horizontal Cloud-to-Ground Lightning Flash Distance Using Weather Surveillance Radar and the Distance Between Successive Flashes Method," (AFIT/GM/ENP/99M-03); Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt John Crane, "Improving Cape Canaveral's Next-Day Thunderstorms Forecasting Using a Meso-ETA Model-Based Index," (AFIT/GM/ENP/99M-04), Faculty Advisor: Walters, Sponsor: 45 WS/SYR

1st Lt Michael W. Engel, "Evaluation of Barnes' Method and Kriging for Estimating the Low Level Wind Field," (AFIT/GM/ENP/99M-05); Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

Capt James Everitt, "An Improved Thunderstorm Forecast Index for Cape Canaveral Florida," (AFIT/GM/ENP/99M-06), Faculty Advisor: Miner, Sponsor: 45WS/SYR

Capt Steven J. Storch, "Predicting Launch Pad Winds at the Kennedy Space Center with a Neural Network Model," (AFIT/GM/ENP/99M-11); Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt Gerald Sullivan, "Using the WSR-88D to Forecast Downburst Winds at Cape Canaveral Air Station and the Kennedy Space Center," (AFIT/GM/ENP/99M-12), Faculty Advisor: Walters, Sponsor: 45th WS/SYR

AIR INTELLIGENCE AGENCY

Capt C.J. Fogle, "Strategies for Steganalysis of Bitmap Graphics Files," (AFIT/GCS/ENG/99M-05), Faculty Advisor: Potoczny, Sponsor: NAIC/TAC

Capt B.J. Mortenson, "The Effect Of Registration Errors On Tracking In A Networked Radar System," (AFIT/GE/ENG/99M-19), Faculty Advisor: Gustafson, Sponsor: NAIC/TAER

Capt T.S. Pittman, "A Climatology-Based Model For Long-Term Prediction Of Radar Beam Refraction," (AFIT/GE/ENG/99M-23), Faculty Advisor: Pyati, Sponsor: NAIC/TAER

AIR MOBILITY COMMAND

Capt T. W. Albrecht, "Modeling and Analysis of Aerial Port Operations, " (AFIT/GOR/ENS/99M-01), Faculty Advisor: Bauer, Sponsor: HQ AMC/XPY

Maj D. M. Ryer, "Implementation of the Metaheuristic Tabu Search in Route Selection for Mobility Analysis Support System," (AFIT/GOA/ENS/99M-07), Faculty Advisor: Bailey, Sponsor: AMC/XPY

Maj D. W. Williams, "An Evaluation and Comparison of the ACE and BRACE Airfield Models," (AFIT/GOA/ENS/99M-10), Faculty Advisor: Bauer, Sponsor: HQ AMC/XPY

ARMY

US ARMY EDGEWOOD CHEMICAL BIOLOGICAL CENTER

2d Lt Janine Wiggins, "Optimization of a Multilayer Photothermal Sensor for Infrared Spectroscopy," (AFIT/GAP/ENP/99J-16), Faculty Advisor: Burggraf, Sponsor: HQ CBDCOM/SCBRD

US ARMY RECRUITING COMMAND

Capt E. L. McLarney, "Using Simulation to Model the Army Recruiting Station with Multi-Quality Prospects," (AFIT/GOR/ENS/99M-10), Faculty Advisor: J.O. Miller, Sponsor: US Army Recruiting Command

US ARMY SAFETY CENTER

Capt B. K. Sperling, "A Value Focused Approach to Determining the Top Ten Hazards in Army Aviation," (AFIT/GOR/ENS/99M-16), Faculty Advisor: Kloeber, Sponsor: US Army Safety Center

ATLANTIC COMMAND

JOINT COMMAND & CONTROL WARFARE CENTER

1st Lt P. M. Kerchner, Jr, "A Value-Focused Approach to Psychological Operations," (AFIT/GOR/ENS/99M-07), Faculty Advisor: Deckro, Sponsor: JCCWC

AUSTRALIAN DEPARTMENT OF DEFENCE

Maj K.E. Crowe, "A Comparative Analysis of the Iridium and Globalstar Satellite System Transmission Paths," (AFIT/GSO/ENG/99M-01), Faculty Advisor: Raines, Sponsor: Dept of Defense, Australia

BRAZILIAN AIR FORCE

1st Lt A.G. Valente, "Analysis of N-Tier Architecture Applied to Distributed Database Systems," (AFIT/GCE/ENG/99J-04), Faculty Advisor: Lamont, Sponsor: Brazilian Air Force

CANADIAN FORCES

Maj K.D. Johnston, "Analysis of Radio Frequency Interference Effects On a Modern Code GPS Receiver," (AFIT/GSO/ENG/99M-02), Faculty Advisor: Miller, Sponsor: CFB Winnipeg

DEPARTMENT OF DEFENSE

DEFENSE INFORMATION SYSTEMS AGENCY

Capt D.R. Lomsdalen, "A Modeling and Simulation Approach To Analyze The Workload Analysis Of Network Router Access List Growth," (AFIT/GCS/ENG/99M-11), Faculty Advisor: Gunsch, Sponsor: DISA/JEEBC

DEFENSE THREAT REDUCTION AGENCY

Capt Craig F. Lamarche, "Performance Evaluation of the Nuclear Weapon (NWP) Source Model for the Hazard Prediction and Assessment Capability (HPAC) Code," (AFIT/GAP/ENP/99S-01), Faculty Advisor: Jodoin, Sponsor: DTRA/CP

Capt Mark Wittig, "Implementation of a Two-Dimensional Hydrodynamics Shock Code Based Upon the Weighted Average Flux Method," (AFIT/GAP/ENP/99J-01), Faculty Advisor: Mathews, Sponsor: DTRA

NATIONAL SECURITY AGENCY

Capt K. S. Bellamy, "Analysis of a Non-Trivial Queuing Network," (AFIT/GOA/ENS/99M-02), Faculty Advisor: Murdock & Reid, Sponsor: NSA

INSTITUTE FOR NATIONAL SECURITY STUDIES

Capt J.M. Griffin, "Expeditious Method For Estimating Cleanup Costs At Department of Defense Installations in Korea," (AFIT/GEE/ENV/99M-06), Faculty Advisor: Goltz, Sponsor: INSS

Capt D.H. Hartman, "Expeditious Methods for Site Characterization and Risk Assessment at Department of Defense Hazardous Waste Sites in the Republic of Korea," (AFIT/GEE/ENV/99M-07), Faculty Advisor: Goltz, Sponsor: INSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Capt R.H. Broyles, "Performance Analysis of TCP Enhancements in Satellite Data Networks," (AFIT/GCE/ENG/99M-02), Faculty Advisor: Raines, Sponsor: NASA

THE BOEING COMPANY

Capt Thomas L. Miller Jr., "East Coast Abort Modeling with RTL Elimination for the Space Shuttle-Liquid Fly Back Booster Launch System," (AFIT/GSO/ENY/99M-07), Faculty Advisor: Wiesel, Sponsor: Liquid Fly Back Booster, Boeing Defense Group, Seal Beach, CA

Capt David J. Vloedman, “ Anti-ballistic Missile Laser Predictive Avoidance of Satellites: Theory and Software For Real-Time Processing and Deconfliction of Satellites With A Moving Platform Lase,” (AFIT/GSO/ENY/99M-09), Faculty Advisor: Wiesel, Sponsor: BMV41 IPT/ABL Program, Boeing Defense and Space Group, Seattle, WA

3.9 FUNDED RESEARCH PROJECTS

[* Denotes duplicate entry, multiple faculty.]

AGNES, Capt GREGORY S. (ENY)

Agnes, "Vibration Suppression of Bladed-Disk Assemblies," ENY, Sponsor: AFOSR

Agnes, "AFIT Space Research," ENY, Sponsor: DoD

Agnes, "Smart Structures for Vibration Suppression of Optical Surfaces," ENY, Sponsor: AFOSR

*Collins, P.J. and G.S. Agnes, "RCS Comparisons of Traditional and Adaptive UAV Wings," (\$65,000), ENG, Sponsor: DARPA/DSO

*Terzuoli, A.J., Jr., G. Agnes, and P.J. Collins, "Effects of Aircraft Flex on RCS," Sponsor: DARPA, ASC/EN, and ARFL/SN

BAILEY, Lt Col T. GLENN (ENS)

Bailey, "Dynamic Unmanned Aerial Vehicle (UAV) Routing with a Java-Encoded Reactive Tabu Search Metaheuristic," ENS, Sponsor: UAV Battlelab

Bailey, "Unmanned Aerial Vehicle Mission Level Simulation," ENS, Sponsor: UAV Battlelab

Bailey, "A Java Based Human Computer Interface for a UAV Decision Support Tool Using Conformal Mapping," ENS, Sponsor: UAV Battlelab

Bailey, "C-17 Strategic Brigade Airdrop Simulation and Analysis," ENS, Sponsor: ASC/YC

Bailey, "Solving the Multidimensional Multiple Knapsack Problem with Packing Constraints using Tabu Search," ENS, Sponsor: Air Force Studies and Analyses Agency

BAUER, KENNETH W. (ENS)

Bauer, "The Mathematical Modeling of Mental Workload using Artificial Neural Networks," ENS, Sponsor: AFOSR.

*Bauer and Lanning "Feature Selection in Recurrent Neural Networks (RNN) with Application to Estimating Pilot Workload," ENS, Sponsor: AFOSR

*Miller, Bauer, and Kloeber, "Using Simulation to Model the Army Recruiting Station With Multi-Quality Prospects," ENS, Sponsor: HQ US Army Recruiting Command

*Bauer and Miller, "An Investigation of Possible Solutions to the Technical Barriers facing Performance Estimation for MSTAR," ENS, Sponsor: AFRL/SNA.

BONS, Major Jeffrey P. (ENY)

Bons, "Real Surface Effects on Turbine Heat Transfer and Aerodynamic Performance," ENY, Sponsor: DOE Advanced Gas Turbine Systems Research (AGTSR).

Bons, "Investigation of Turbine Rotor Internal Cooling and Turbine Stator External Aerodynamics," ENY, Sponsor: AFOSR/AFRL.

BROTHERS, Maj CHARLES P., JR. (ENG)

Brothers, C.P., Jr., "Advanced VLSI Research," (\$15,000), ENG, Sponsor: AFRL/IFTC.

Brothers, C.P., Jr., "Space Electronics Research," (\$2,000), ENG, Sponsor: AFRL/VSSE.

Brothers, C.P., Jr., researcher on Dr. Lamont's program, "Global Information Compression Methodology & Implementation for Enhanced C4ISR System Integration," ENG, Sponsor: DAGSI

BURGGRAF, LARRY W. (ENP)

Burggraf, L.W. and J.B. Martin, "Uranium Dioxide Study", AF Technical Application Center, AFTAC/XBP, (Q12FY98000043, Q12FY99000725): \$78K FY 98, \$50K FY99.

Burggraf, L.W. and J.B. Martin, "Multiplexed Compton Imaging of Hidden Corrosion" (QWLML977200004), AFRL/ML \$75K FY 97, \$10.4K FY98.

Burggraf, L.W. "FTIR Characterization" US ARMY ERDC (AF18509867HE501) MIPR 9EDERGM-081: \$186K FY 98, \$100K FY 99.

*Burggraf, L.W. and Weeks, D., AFOSR (QAF185995203021, AFOSR PO990016), "Theoretical Calculations of Chemistry and Photoluminescence Spectroscopy for Adsorbates on SiC Clusters and Surfaces." \$58.5K FY98/99.

Burggraf, L.W., AFOSR (QAF185995203038, AFOSR PO990030) "Multiplexed Compton Scatter Tomography for Non-Destructive Evaluation of Corrosion in Aging Aircraft", \$105K FY98/99.

CHAN, YUPO (ENS)

Chan, "Modeling Communication Networks," ENS, Sponsor: National Security Agency

COLLINS, Maj PETER J. (ENG)

*Collins, P.J. and G.S. Agnes, "RCS Comparisons of Traditional and Adaptive UAV Wings," (\$65,000), ENG, Sponsor: DARPA/DSO

Collins, P.J., "HPM Susceptibility Models," (\$30,000 in '98), ENG, Sponsor: AFRL/DEPA.

*Terzuoli, A.J., Jr., G. Agnes, and P.J. Collins, "Effects of Aircraft Flex on RCS," Sponsor: DARPA, ASC/EN, and AFRL/SN

*Terzuoli, A.J., Jr., P.J. Collins, G.A. Thiele, and G.B. Lamont, "Genetic Antenna Designs for Remote Sensing," Sponsor: AFTAC

*Terzuoli, A.J., Jr., P.J. Collins, and G.A. Thiele, "Bistatic RCS Characterization," Sponsor: ASC/EN and AFRL/SN

DECKRO, RICHARD F. (ENS)

Deckro, "Using Program and Project Management in Joint Campaign Planning," ENS, Sponsor: Air Force Office of Scientific Research

Deckro, "Rapid Approaches to Joint Campaign Planning," ENS, Sponsor: Air Force Office of Scientific Research

*Deckro, Jackson, Kloeber, and Doyle, "A Value Function Approach to Information Operations Measures of Merit," ENS, Sponsor: JC²WC and USSOCOM

*Kloeber, Jackson, and Deckro, "Designing a CERCLA Based Hierarchy for DNAPL Remediation Technology Selection," ENS, Sponsor: Department of Energy

*Jackson, Kloeber, and Deckro, "A Risk Profile for Remediation Technologies," ENS, Sponsor: Department of Energy

*Deckro, Kloeber, and Jackson, "Technology Selection for the Air Force Research Laboratory," ENS, Sponsor: HQ AFRL

*Deckro and Kloeber, "Modeling Psychological Operations," ENS, Sponsor: AIA/DO2 and JC²WC

*Deckro and Kloeber, "Modeling Cognitive Information Operations," ENS, Sponsor: JC²WC, Institute for Information Technology Application, and Institute for National Security Studies

*Kloeber, and Deckro, "Identifying the Top Ten Army Aviation Hazards," ENS, Sponsor: Army Safety Center, Ft. Rucker, AL

*Kloeber and Deckro, "Analyzing QFD for Use by ACC Modernization Planning Process," ENS, Sponsor: ACC/XP

DELOACH, Maj SCOTT A. (ENG)

DeLoach, S.A., "Agent Development Environments for Large-Scale Multi-Agent, Distributed Mission Planning and Execution in Complex Dynamic Environments," ENG, Sponsor: AFOSR/NM.

*DeLoach, S.A. and T.C. Hartrum, "Collaborative Information Systems and Adaptive Workflow," ENG, Sponsor: Ohio Board of Regents and Dayton Area Graduate Studies Institute (DAGSI).

*DeLoach, S.A., T.C. Hartrum, and R.P. Graham, "Formal Specification and Design of Secure Agents," ENG, Sponsor: AFOSR/NM.

*Talbert, M.L., T.C. Hartrum, and S.A. DeLoach, "An Agent-Based Methodology for Integrating Heterogeneous Resources," ENG, Sponsor: AFRL/SNA.

FRANKE, MILTON E. (ENY)

Franke, M. E., "Wind Tunnel Test Support," ENY, Sponsor: Air Force Research Laboratory, AFRL/MNMF.

Franke, M. E., (with King, P. as PI), "Heat Exchanger Research," ENY, AFOSR/NE.

GALLAGHER, Lt Col MARK A. (ENS)

Gallagher, "Combinatory Optimization for Strategic Nuclear War Planning," ENS, Sponsor: AFOSR, USSTRATCOM

GOLTZ, MARK N. (ENV)

Goltz, "Bioenhanced In-well Vapor Stripping to Treat Trichloroethylene," ENV, Sponsor: DoD/DOE/EPA SERDP

Goltz, "Hazardous Waste Contamination at DoD Sites in Korea: Expeditious Methods for Estimating Risk and Clean-up Costs" ENV, Sponsor: USAF INSS

Goltz, and Huang, "Hazardous Waste Site Characterization Simulator" ENV, Sponsor: DoD ERA

Goltz, "*In Situ* Catalytic Groundwater Treatment Using Pd-Catalysts and Horizontal Flow Treatment Wells," ENV, Sponsor: DoD ESTCP

Shelley and Goltz, "Abiotic and Biochemical Fate and Transport of Contaminants," ENV, Sponsor: AFRL/ML, DAGSI

GRAHAM, Maj, ROBERT P. (ENG)

*DeLoach, S.A., T.C. Hartrum, and R.P. Graham, "Formal Specification and Design of Secure Agents," ENG, Sponsor: AFOSR/NM.

GUSTAFSON, STEVEN C. (ENG)

Gustafson, S.C., "Optical Characterization of Material Surface Damage," ENG, Sponsor AFOSR grant 1999.

HARTRUM, THOMAS C. (ENG)

*DeLoach, S.A. and T.C. Hartrum, "Collaborative Information Systems and Adaptive Workflow," ENG, Sponsor: Ohio Board of Regents and Dayton Area Graduate Studies Institute (DAGSI).

*DeLoach, S.A., T.C. Hartrum, and R.P. Graham, "Formal Specification and Design of Secure Agents," ENG, Sponsor: AFOSR/NM.

*Talbert, M.L., T.C. Hartrum, and S.A. DeLoach, "An Agent-Based Methodology for Integrating Heterogeneous Resources," ENG, Sponsor: AFRL/SNA.

HENGHELD, ROBERT L. (ENP)

Yeo, Y.K. and Hengehold, R.L., "Development of Optically Assisted Deep Level Transient Spectroscopy for SiO₂ and Wide Band Gap Material Characterization," ENP, Sponsor: Defense Threat Reduction Agency

Yeo, Y.K. and Hengehold, R.L., "Ion Implantation and Metallic Contact Studies for Application to AlGa_N Optoelectronic Devices," ENP, Sponsor: AFOSR/NE

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HILL, Lt Col RAYMOND R. (ENS)

Hill, "Evaluation and Analysis of Expeditionary Force Experiment (EFX) 98 Assessment Experiences and EFX 98 Assessment Evaluation," ENS, Sponsor: EFX SPO.

Hill, "A Bayesian Decision Model for Battle Damage Assessment," ENS, Sponsor: Command and Control Battlelab.

Hill, "Pilot Inventory Complex Adaptive System (PICAS): An Artificial Life Approach to Managing Pilot Retention," ENS, Sponsor: Institute for National Security Studies (INSS) and AF Personnel Operations Agency

Hill, "Reduction of the Aircraft Ground Equipment Footprint of an Aerospace Expeditionary Force (AEF)," ENS, Sponsor: AEF Battlelab.

Hill, "Strategic Effects of Airpower and Complex Adaptive Agents: An Initial Investigation," ENS, Sponsor: INSS and AF Studies and Analyses Agency

*Hill and McIntyre, "Strategic Effects," ENS, Sponsor: HQ USAF/XOC

JACOBS, Maj TIMOTHY M., (ENG)

Jacobs, "Strategic Brigade Airdrop Simulation and Analysis," ENG, Sponsor: ASC/TC

KLOEBER, LTC JACK M., Jr. (ENS)

*Deckro, Kloeber, and Jackson, "Technology Selection for the Air Force Research Laboratory," ENS, Sponsor: HQ AFRL

*Deckro and Kloeber, "Modeling Psychological Operations," ENS, Sponsor: AIA/DO2 and JC²WC

*Deckro and Kloeber, "Modeling Cognitive Information Operations," ENS, Sponsor: JC²WC, Institute for Information Technology Application, and Institute for National Security Studies

*Deckro, Kloeber, and Jackson, "Technology Selection for the Air Force Research Laboratory," ENS, Sponsor: HQ AFRL.

*Deckro, Jackson, Kloeber, and Doyle, "A Value Function Approach to Information Operations Measures of Merit," ENS, Sponsor: JC²WC and USSOCOM

*Kloeber, Jackson, and Deckro, "Designing a CERCLA Based Hierarchy for DNAPL Remediation Technology Selection," ENS, Sponsor: Department of Energy

*Kloeber and Deckro, "Identifying the Top Ten Army Aviation Hazards," ENS, Sponsor: Army Safety Center, Ft. Rucker, AL

*Kloeber and McIntyre, "Precision Airdrop," ENS, Sponsor: AF Mobility Battlelab and Army Dismounted Battlelab

*Kloeber and Moore: "Data Envelopment Analysis and Recruiting Resource Allocation and Evaluation," ENS, Sponsor: US Army Recruiting Command

*Kloeber and Deckro, "Analyzing QFD for Use by ACC Modernization Planning Process," ENS, Sponsor: ACC/XP

KLOEBER, LTC JACK M., Jr. (ENS) (continued)

*Miller, Bauer, and Kloeber, "Using Simulation to Model the Army Recruiting Station with Multi-Quality Prospects," ENS, Sponsor: HQ US Army Recruiting Command

LAMONT, GARY B. (ENG)

Lamont, G.B., "Global Information Compression for C4ISR," (\$104,939), ENG, Sponsor: AFRL/DAGSI

Lamont, G.B., "Digital Signal and Image Processing," (\$45,000), ENG, Sponsor: AFRL/RL/OC-HPC/CHSSI

*Terzuoli, A.J., Jr., P.J. Collins, G.A. Thiele, and G.B. Lamont, "Genetic Antenna Designs for Remote Sensing," Sponsor: AFTAC

LANNING, Maj JEFFREY W. (ENS)

*Lanning and McIntyre, "Validation of the Space Information Distributed Architecture (SPIDAR) Model," ENS, Sponsor: Space Warfare Center (SWC/AEA)

*Bauer and Lanning "Feature Selection in Recurrent Neural Networks (RNN) with Application to Estimating Pilot Workload," ENS, Sponsor: AFOSR

LIEBST, BRADLEY S. (ENY)

*Spenny, C.H. and Liebst, B.S. , "Model of a Sustained-G Dynamic Flight Simulator- Version Delta," Sponsor: Environmental Tectonics Corporation, Southampton, PA.

LOTT, Maj JAMES A. (ENG)

Lott, J.A., "Microcavity Lasers," ENG, Sponsor: AFOSR

MAGEE, Maj ERIC P. (ENG)

Magee, E.P., "Signal Modeling and Mean Frequency Estimation for Incoherent Scatter Bistatic Doppler Lidar," (\$10,168), ENG, Sponsor: AFOSR

MAYBECK, P.S. (ENG)

*Pachter, M., P.S. Maybeck, M.M. Miller, J.F. Raquet, "GPS Navigation," (\$15,000), ENG, Sponsor: CIGTF

McINTYRE, Lt Col GREGORY A. (ENS)

*Hill and McIntyre, "Strategic Effects," ENS, Sponsor: HQ USAF/XOC

*Lanning and McIntyre, "Validation of the Space Information Distributed Architecture (SPIDAR) Model," ENS, Sponsor: Space Warfare Center (SWC/AEA)

McIntyre, "Air-to-Air Combat Modeling Validation," ENS, Sponsor: HQ USAF/XOC

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McINTYRE, Lt Col GREGORY A. (ENS) (continued)

McIntyre, "Using Goal Lattices for Sensor Management," ENS, Sponsor: AFOSR

MILLER, Lt Col JOHN O. (ENS)

*Miller, Bauer, and Kloeber, "Using Simulation to Model the Army Recruiting Station with Multi-Quality Prospects," ENS, Sponsor: HQ US Army Recruiting Command

*Miller and Murdock, "AMRAAM Fleet Life Cycle Simulation," ENS, Sponsor: AMRAAM JSPO, ASC/YAF

*Bauer and Miller, "An Investigation of Possible Solutions to the Technical Barriers facing Performance Estimation for MSTAR," ENS, Sponsor: AFRL/SNA.

MILLER, Lt Col MIKEL M. (ENG)

Miller, M.M., "RAVEN Test Bed Development," (\$10,000), ENG, Sponsor: 746th Test Squadron.

*Pachter, M., P.S. Maybeck, M.M. Miller, J.F. Raquet, "GPS Navigation," (\$15,000), ENG, Sponsor: CIGTF

MOORE, JAMES T. (ENS)

*Kloeber and Moore: "Data Envelopment Analysis and Recruiting Resource Allocation and Evaluation ," ENS, Sponsor: US Army Recruiting Command

MURDOCK, Maj W. PAUL (ENS)

Murdock, "AMRAAM Pin Failure Data Analysis," ENS, Sponsor: AMRAAM JSPO, ASC/YAA

*Miller and Murdock, "AMRAAM Fleet Life Cycle Simulation," ENS, Sponsor: AMRAAM JSPO, ASC/YAF

OXLEY, MARK E. (ENC)

Oxley, M. E., "A Reductionist Approach to Process Discovery," ENC, Sponsor: AFOSR

PACHTER, M. (ENG)

Pachter, M., "Satellite Formation Control," (\$21,000), ENG, Sponsor: AFOSR

Pachter, M., "Adaptive & Nonlinear Control," (\$5,100), ENG, Sponsor: AFOSR

Pachter, M., "Adaptive Optics," (\$30,000), ENG, Sponsor: PL/LIA

*Pachter, M., P.S. Maybeck, M.M. Miller, J.F. Raquet, "GPS Navigation," (\$15,000), ENG, Sponsor: CIGTF

QUINN, DENNIS W. (ENC)

Quinn, D. W., "The fate and transport of airborne JP-8 during cold startup," ENC, Sponsor: AFOSR

RAINES, Maj RICHARD A. (ENG)

*Raines, R.A. and M.A. Temple, "Technical Support, AF Communication Systems Modeling," Sponsor: AFCA/ITAI

RAQUET, Capt JOHN F. (ENG)

Raquet, J.F., "GPS Jamming Detection," (\$20,000), ENG, Sponsor: CIGTF

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*Pachter, M., P.S. Maybeck, M.M. Miller, J.F. Raquet, "GPS Navigation," (\$15,000), ENG, Sponsor: CIGTF

SHELLEY, MICHAEL L. (ENV)

Shelley and Goltz, "Abiotic and Biochemical Fate and Transport of Contaminants," ENV, Sponsor: AFRL/ML, DAGSI

SPENNY, CURTIS H. (ENV)

*Spenny, C.H. and Liebst, B.S., "Model of a Sustained-G Dynamic Flight Simulator- Version Delta," Sponsor: Environmental Tectonics Corporation, Southampton, PA.

TALBERT, Maj MICHAEL L. (ENG)

Talbert, M.L., Object Store Object Oriented DBMS license maintenance (\$4,150), ENG, Sponsor: AFRL/SNZW

Talbert, M.L., T.C. Hartrum, and S.A. DeLoach, "An Agent-Based Methodology for Integrating Heterogeneous Resources," ENG, Sponsor: AFRL/SNA.

Talbert, M.L., "Intelligent Profile-Based Access to Remote Target Databases and Metadata Holdings," (\$24,000), ENG, Sponsor: AFRL/SNAS.

Talbert, M.L., "Research Impact Statement Database System," (\$2,500), ENG, Sponsor: AFIT/ENR

TEMPLE, Maj MICHAEL A. (ENG)

*Raines, R.A. and M.A. Temple, "Technical Support, AF Communication Systems Modeling," Sponsor: AFCA/ITAI

TERZUOLI, ANDREW J., JR. (ENG)

*Terzuoli, A.J., Jr., G. Agnes, and P.J. Collins, "Effects of Aircraft Flex on RCS," Sponsor: DARPA, ASC/EN, and AFRL/SN

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WEEKS, DAVID E. (ENP)

D.E. Weeks, "Nonadiabatic Molecular Reaction Dynamics," AFOSR, \$91,910, 1999.

*L.W. Burggraf and D.E. Weeks, "Theoretical Calculations of Chemistry and Photoluminescence Spectroscopy for Adsorbates on SiC Clusters and Surfaces," AFOSR, \$58,330, 1999.

WOOD, AIHUA W. (ENC)

Wood, A. W., "Scattering and propagation of electromagnetic waves," ENC, Sponsor: AFOSR.

YEO, YUNG KEE (ENP)

Yeo, Y.K. and Hengehold, R.L., "Development of Optically Assisted Deep Level Transient Spectroscopy for SiO₂ and Wide Band Gap Material Characterization," ENP, Sponsor: Defense Threat Reduction Agency

Yeo, Y.K., "Electrical Characterization of Si_{1-x-y}Ge_xC_y/Si Heterostructures," ENP, Sponsor: DARPA/ETO

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3.10 REFEREED JOURNAL PUBLICATIONS

[* Denotes duplicate entry, multiple faculty authors.]

BAILEY, Lt Col T. GLENN (ENS)

Bailey, T.G., P.A. Jensen, and D.P. Morton, "Response Surface Analysis of Two-Stage Stochastic Linear Programming with Recourse," Naval Research Logistics, Vol. 46, No. 7, pp. 753-776, 1999.

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BAUER, KENNETH W. (ENS)

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*Jackson, J.A., J.M. Kloeber, B.E. Ralston and R.F. Deckro, "Selecting a Portfolio of Technologies: An Application of Decision Analysis," Decision Sciences, Vol. 30, No. 1, pp. 217-238.

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Utton, T.S. and A.J. Terzuoli, Jr., "Application of the Finite Difference Time Domain (FDTD) Technique to the Analysis and Design of Transverse Electromagnetic (TEM) Horns," Proceedings of the XXVith General Assembly, p. 666, Toronto, ON, Canada, 13-21 Aug 99.

*Cochran, J.G., P.J. Collins, A.J. Terzuoli, Jr., and E.A. Mendez, "Scattering from Bubbles in Radar Absorbing Material," Proceedings of the 45th Annual Tri-Service Radar Symposium, Monterey CA, June 1999.

Eigel, R. L., Jr., A.J. Terzuoli, Jr., and G. Nesti, "Bistatic Radar Cross Section of Complex Objects," Proceedings of the 1999 International Geoscience and Remote Sensing Symposium, pp. 455-457, Hamburg, GE, 28 Jun-2 Jul 99.

TURCOTTE, Lt Col JEFFREY S. (ENY)

E. D. Swenson, J. S. Turcotte, B. S. Liebst, H. A. Arb and M. P. DeSimio, "Damage Detection Using Pattern Classifiers," Proceedings of the SEM Annual Conference on Theoretical, Experimental and Computational Mechanics, 7-9 June, 1999, pp. 66-69.

J. S. Turcotte, "A Coupled Plate Model of a Bladed Disk Assembly," Proceedings of the 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, June 20-23, 1999, Los Angeles, CA, paper no. AIAA-99-2809.

WALTERS, MICHAEL K. (ENP)

Walters, Michael K., and J.D. Shull, "A Validation Study of the Air Force Weather Agency (AFWA) JETRAx Contrail Forecast Algorithm." Eighth Conference on Aviation, Range, and Aerospace Meteorology, Dallas, TX, Amer. Meteor. Soc., 591-595, 1999.

WEEKS, DAVID E. (ENP)

T. A. Niday (GAP-98M) and D.E. Weeks, "Scattering Matrix Elements for the Fine Structure Transition $B(^2P_{1/2}) + H_2(j) \rightarrow B(^2P_{3/2}) + H_2(j)$," Proceedings of the High Energy Density Matter (HEDM) Contractors' Conference Held 8-10 June 1999 in Cocoa Beach FL, AFOSR Technical Report, in press.

*D.E. Weeks, S.J. Novotny, S. Yang, and R.L. Hengehold, "Quantum Well Dispersion Relations," Diode Laser Technology Review Technical Digest, 10-13 May 1999, Fort Walton Beach, FL.

WOLF, Lt Col PAUL J. (ENP)

J.C. Holtgrave and P.J. Wolf, "Collisional Broadening and Shift of Sr Lines by the Rare Gases," Bulletin of the American Physical Society, **44**(1), Part II, pg 1640 (1999).

3.12 SUBSTANTIAL CONSULTATIONS

[*Denotes duplicate entry, multiple faculty contributors.]

BAILEY, Lt Col T. GLENN (ENS)

*Served as statistical consultant (with Dr. Bauer, ENS) for Department of Justice concerning mediation with Raytheon.

BAILEY, WILLIAM F. (ENP)

Evaluation of alternative Stealth technologies for Air Force Research Laboratory.

Analysis of shock modification in non-equilibrium flows for Air Force Research Laboratory.

BROTHERS, Maj CHARLES P., JR. (ENG)

Brothers, Charles P., Jr.. Consultation: Space Electronics & Advance SOI Fabrication. Sponsor: AFRL/SND

Brothers, Charles P., Jr.. Consultation: Space Electronics. Sponsor: AFRL/VSSE

BROWN, WILLIAM M. (ENG)

*Terzuoli, A.J., Jr., P.J. Collins, and W.M. Brown. Consultation: Computer Model Simulation Studies in Support of High Resolution Radar, Synthetic Aperture Radar and Infrared Vision. Sponsor: AFRL/SN

CHAN, YUPO (ENS)

Consulted with the National Security Agency on information warfare/operations, Dec 1998 and May 1999.

Consulted with AFRL/HECI on the low observable in-flight replanning program.

CHRISSIS, JAMES W. (ENS)

Consulted with ASC Electronic Combat Development System Program Office on the integration of a computerized production design, manufacturing, and control system.

COLLINS, Maj PETER J. (ENG)

Collins, P.J. Consultation: Antenna Characterization. Characterized several antennas used to assess US electronic warfare systems and produced a test report dated July 1999. Sponsor: AFIWC/SMV

*Terzuoli, A.J., Jr., P.J. Collins, and G.A. Thiele. Consultation: Impulse Radiating TEM Horn Antenna Design. Sponsor: AFRL/DE

*Terzuoli, A.J., Jr., and P.J. Collins. Consultation: Bubbles in RAM. Sponsor: ASC/EN

*Terzuoli, A.J., Jr., P.J. Collins, and W.M. Brown. Consultation: Computer Model Simulation Studies in Support of High Resolution Radar, Synthetic Aperture Radar and Infrared Vision. Sponsor: AFRL/SN

CROWN, Maj JOHN S. (ENC)

Crown, J. S. Consultation: Perchlorate in Fertilizers. Sponsor: AFRL/HEST. August-September 1999.

DECKRO, RICHARD F. (ENS)

Worked with DARPA and OSD OT&E on formulating Information Assurance issues, procedures and policies.

Participated with AIA DO-2 on developing measures for physiological operations.

DELOACH, Maj SCOTT A. (ENG)

DeLoach, Scott A. Consultation: Virtual Expert Cost-Estimator for Air-Vehicle Science and Technology (VECAST). Sponsor: AFRL/VA

FRANKE, MILTON E. (ENY)

Franke, M. E. Consultation: ASME International (Committee on Planning and Organization), 17-18 November 1998, 11-13 March 1999, 8-9 June 1999, 12 September 1999.

Franke, M. E., Consultation: AIAA Weapon Systems Effectiveness Technical Committee, 12 January 1999, 6-8 April 1999, 19 July 1999.

Franke, M. E., Consultation: AFRL/MN, Joined-Wing Missile Model Test Results, 12 April 1999.

Franke, M. E., Consultation: AFRL/MLMA, Lean Aerospace Initiative (Test and Space Operations), March-April 1999 (2 days), 24-25 June 1999, July-September 1999 (3 days).

Franke, M. E., Consultation: AFRL/DE, Heat Transfer Research, June 1999 (1 day), 29 September 1999.

Franke, M. E., AFRL/VACM, Heat Transfer Research, January-September 1999 (2 days).

GUNSCH, GREGG H. (ENG)

Gunsch, G.H.. Consultation: Invited member of a senior scientist search committee to develop an appropriate set of hiring criteria for the branch's Senior Scientist position and a list of potential candidates to pursue. Sponsor: AFRL/IFGB

JACOBS, Maj TIMOTHY M. (ENG)

Jacobs, T.M.. Consultation: Visualization of Airlift Flow Model Simulating Worldwide Air Mobility Missions. Sponsor: AMC/XP

Jacobs, T.M.. Consultation: Visual Tools to Navigate and Consolidate Intelligence Data for Project BROADSWORD. Sponsor: AFRL/IFED

Jacobs, T.M.. Consultation: AFIT-ASC collaboration to make greater use of the MSRC during systems acquisition; co-investigator: Bailey (ENS). Sponsor: ASC/HP

JODOIN, Maj VINCENT J. (ENP)

Advised DTRA/CPWE, USSTRATCOM/J53, and UK MOD on capabilities and possible improvements to current and future nuclear weapon fallout models.

JOHN, GEORGE (ENP)

Collaboration with AFML Tribology Branch on applications of Mossbauer Spectrometry to problems in tribology. Funding for equipment and materials provided by AFML. No formal project established.

KLOEBER, LTC JACK M., Jr. (ENS)

Co-taught a 4.5-day course to 32 Army Logistics Management College attendees at Ft. Lee, VA, January 1999.

Instructor and consultant to ACC's and AFSPC's project for improved and combined modernization efforts.

Independent consultant for Toffler Associates working with the INEEL and Hazardous Waste Cleanup Problem in Idaho Falls, ID, Summer 1999.

LAMONT, GARY B. (ENG)

Lamont, G.B. Consultation: Computational Circuit Simulation. Sponsor: AFRL/Avionics Directorate.

Lamont, G.B. Consultation: Computational Micro-Biology. Sponsor: AFRL/Materials Directorate.

Lamont, G.B. Consultation: Computational Digital Signal/Image Processing. Sponsor: AFRL/Rome Laboratory

LOTT, Maj JAMES A. (ENG)

Lott, J.A.. Consultation: Design, Fabrication, Characterization, and Analysis of Microcavity Lasers. Sponsor: AFRL/SND

MAGEE, Maj ERIC P. (ENG)

Magee, E.P.. Consultation: Bi-directional Reflectance Distribution Function (BRDF) experiments. Sponsor: AFRL/SNJ.

MILLER, Lt Col MIKEL M. (ENG)

Miller, M.M. and J.F. Raquet. Consultation: Consulted with the 746th Test Squadron concerning current GPS technology. Sponsor: 746th Test Squadron

MURDOCK, Maj W. PAUL (ENS)

Member of the System Evaluation and Analysis Simulation (SEAS) Tiger Team sponsored by HQ USAF/XOC to evaluate SEAS for inclusion in the Air Force Suite of Models.

NIXON, Lt Col WM. BRENT (ENV)

Lt Col Nixon serves as a member of the HQ AFMC Environmental Restoration Peer Review Committee, providing technical guidance and funding recommendations for projects in the Command's \$120-million FY99 environmental restoration program.

Lt Col Nixon, in cooperation with the Air Force Center for Environmental Excellence, provided technical peer review of 13 projects (\$46 million) managed by the Air Force Base Conversion Agency for O'Hare and Chanute AFB IL.

PACHTER, MEIR N. (ENG)

Pachter, M.. Consultation: Member of AFRL/VAAD AFOSR Star Team. Sponsor: AFRL/VAAD

PERRAM, Lt Col GLEN P. (ENP)

Evaluated Small Business Innovative Research proposals on advanced lasers for the Ballistic Missile Defense Office.

RAQUET, Capt JOHN F. (ENG)

*Miller, M.M. and J.F. Raquet. Consultation: Consulted with the 746th Test Squadron concerning current GPS technology. Sponsor: 746th Test Squadron

TALBERT, Maj MICHAEL L. (ENG)

Talbert, M.L.. Consultation: A Sponsored Deployment Object Working Group (DOWG) via telecon. This is done on a recurring basis. Sponsor: DARPA

Talbert, M.L.. Consultation: Hand-picked database consultant to Base Tiger Team to investigate suspiciously Non-random nature of urinalysis test selection. Tentative findings were that software function used to generate random number seed is based on a repeating value generated by system clock.

Talbert, M.L. Consultation: Surveillance and Reconnaissance Database done for HQ USAF/XOIR DCS. Provided consulting services to the Air Force Tactical Exploitation of National Capabilities (AF TENCAP). Consult redirected the database effort and directly saved the AF TENCAP program \$70,000. Sponsor: USAF/XOIR DCS.

Talbert, M.L. Consultation: Consortium for DARPA-sponsored Deployment Object Working Group

TERZUOLI, ANDREW J., JR. (ENG)

Terzuoli, A.J., Jr., P.J. Collins, and G.A. Thiele. Consultation: Impulse Radiating TEM Horn Antenna Design. Sponsor: AFRL/DE

Terzuoli, A.J., Jr., and P.J. Collins. Consultation: Bubbles in RAM. Sponsor: ASC/EN

Terzuoli, A.J., Jr., P.J. Collins, and W.M. Brown. Consultation: Computer Model Simulation Studies in Support of High Resolution Radar, Synthetic Aperture Radar and Infrared Vision. Sponsor: AFRL/SN

TURCOTTE, Lt Col JEFFREY S. (ENY)

Turcotte, Jeffrey S. Consultation: Transient analysis of a solar thermal orbit transfer vehicle for reflector focus performance. Sponsor: AFRL/PR (Edwards AFB). 1 October 1998 – Present.

WALTERS, MICHAEL K. (ENP)

Consulted with members of the 88th Weather Squadron in support of the ASC Reconnaissance Systems Program Office to explore the use of reconnaissance assets as platforms for gathering meteorological data in support of theater operations. Assisting in data analysis to evaluate platform/sensor applicability.

3.13 PRESENTATIONS

[* Denotes duplicate entry, multiple faculty involved in the presentation.]

AGNES, Capt GREGORY S. (ENY)

Agnes, Gregory S. "An Earth to Orbit Simulation of Hybrid Launch Isolation," Presented at the 1999 ASME/AMD/MD Mechanics and Materials Conference, Blacksburg, VA, 27-30 June, 1999.

Agnes, Gregory S. "Smart Structures for Vibration Suppression of Optical Surfaces," Structural Mechanics Workshop, WPAFB, OH, 27-29 Sep 1999.

ANDREW, Col JOHN M. (ENS)

*Roland, R. J., Macedonia, M., Metzger, J., Andrew, J., and Miller, J. O., "Panel: The Future of Military Simulation," 1998 Winter Simulation Conference, Washington, DC, 13-16 Dec 1998.

*Andrew, J. M., Bailey, T. G., and Chrissis, J. W., "Modeling, Simulation, and Analysis Education at the Air Force Institute of Technology," 67th Military Operations Research Society Symposium, U. S. Military Academy, West Point, NY, 22-24 June 1999.

BAILEY, Lt Col T. GLENN (ENS)

Bailey, T. G., "The C-17 Airlift Loading Model," Fall National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Seattle WA, October 1998.

Bailey, T. G., "Unmanned Aerial Reconnaissance Vehicle Routing," Fall National Meeting of INFORMS, Seattle, WA, October 1998.

*Hill, R. R., Bailey, T. G., and McIntyre, G. A., "Application of the New Sciences in Military Modeling," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

*Walston, J. G., Bailey, T. G., and Hill, R. A., "Unmanned Aerial Vehicle Engagement Level Simulation," 67th Military Operations Research Society Symposium (MORSS), U. S. Military Academy, West Point, NY, 22-24 June 1999.

*O'Rourke, K. P., Bailey, T. G., Hill, R. R., and Carlton, W. B. "Dynamic Routing of Unmanned Aerial Vehicles Using Reactive Tabu Search," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Romaine, J. M., Bailey, T. G., Deckro, R. F., and Carlton, W. B., "Solving the Airlift Loading Problem Using Reactive Tabu Search," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Szvetecz, T. S., Bailey, T. G., Kloeber, J., and Carlton, W. B., "The Simulation and Visualization of Airborne Operations," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Ryer, D. M., Bailey, T. G., Moore, J. T., and Carlton, W. B., "Route Selection for the Mobility Analysis Support System Using Tabu Search," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Gaupp, M., Hill, R. R., and Bailey, T. G., "PICAS: Pilot Inventory Complex Adaptive System," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

BAILEY, Lt Col T. GLENN (ENS) (continued)

*Andrew, J. M., Bailey, T. G., and Chrissis, J. W., "Modeling, Simulation, and Analysis Education at the Air Force Institute of Technology," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Fox, S., Bailey, T. G., and Carlton, W. B., "C-17 Airdrop Simulation," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

BAILEY, WILLIAM F. (ENP)

Smithtro, C.G. and Bailey, W. F., "Numerical Solutions to the Spatially Inhomogeneous Boltzmann Equation," Ohio Section of the American Physical Society, Spring Meeting, 30 April 1999.

Tersigni, F. A. and Bailey, W. F., "Influence of a Geometrically Induced Space Chare on the Electron Energy Distribution Function," Ohio Section of the American Physical Society, Spring Meeting, 30 April 1999.

Walker, S.L. and Bailey, W. F., "The Influence of Electron Temperature Variations on Shock Structure in a Glow Discharge," Ohio Section of the American Physical Society, Spring Meeting, 30 April 1999.

BAUER, KENNETH W. (ENS)

*Cordeiro, J. D., Friend, M., Bauer, K. W., Miller, J. O., and Kloeber, J. M. "Using Simulation to Model Time Utilization of Army Recruiters," 37th Army Operations Research Symposium, Fort Leavenworth, KS, Oct 1998.

Blasch, E.P., Alsing, S.G., and Bauer, K.W., "Comparison of Bootstrap and Prior-probability Synthetic Data Balancing Methods for SAR Target Recognition," Algorithms for Synthetic Aperture Radar Imagery VI, Orlando, FL, 5-9 April 1999.

Alsing, S.G., Bauer, K. W., and Blasch, E. P., "Three-Dimensional (3-D) Receiver Operating Characteristic (ROC) Concepts for the Evaluation of Target Recognition Algorithms Faced with the Unknown Target Detection Problem," Automatic Target Recognition IX, Orlando, FL, 7-9 April 1999.

BLECKMANN, CHARLES A. (ENV)

*Johnson, L.M., A.M. Halterman-O'Malley, B. Burke, D. Kellner, C. A. Bleckmann, M. N. Goltz and E.C. Heyse. Biodegradation of Aircraft Deicing Agents in Soils: Laboratory Studies. In Situ and On-Site Bioremediation, Fifth International Symposium. April 19-22, 1999. San Diego, CA.

BROTHERS, Maj CHARLES P., JR. (ENG)

SanGregory, S., C. Brothers, D. Gallagher, and R. Siferd, "A Fast Low-Power Logarithm Approximation with CMOS VLSI Implementation," 42nd Midwest Symposium on Circuits and Systems, Las Cruces NM, 8-11 Aug 99.

BURGGRAF, LARRY W. (ENP)

L.W. Burggraf and James Shoemaker*. "Applications of SIMOMM: An Integrated Molecular Orbital/Molecular Mechanics Optimization Scheme for Surfaces", Invited Chemistry Department Seminar, 2 Oct 1998.

B.L. Evans, J.B. Martin and L.W. Burggraf. "Characterization of a Multiplexed Compton Scatter Tomograph for Non-Destructive Inspection of Thin, Low-Z Samples." 1998 IEEE Nuclear Science Symposium and Medical Imaging Conference, Nov. 1998.

D. Eastwood, J. Martin, D. Rand, L.W. Burggraf, M. Zickafoose, D.L. Perry, "Photoluminescence of Uranium Compounds" (invited paper) in symposium on Photophysics and Application of Luminescent Metal Complexes, J.W. Hofstraat, D. Eastwood (organizers), Eastern Analytical Symposium, November 15-20, 1998.

L.W. Burggraf. "Measures and Models for Metal Toxicity in Bioremediation", Invited Geophysics Department, Wright State University, 18 Feb 1999.

H.T. Mayfield, D. Eastwood and L.W. Burggraf, "Pattern Recognition of Organophosphorus Pesticide and Chemical Agent Infrared Spectra" Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, March 7-12, 1999.

CHAN, YUPO (ENS)

Chan, Y., "Multi-Criteria Stochastic Network Optimization: Improving Reliability vs. Throughput," Fall National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Seattle WA, October 1998.

Chan, Y., "Multi-Criteria Stochastic-Network Optimization: Reliability, Throughput and Extensions," Hong Kong Polytechnic University, Hong Kong, 12 Feb 1999.

Chan, Y., "Telecommunications Networks Research in AFIT," Australian Defense Science & Technology Organization, Adelaide, Australia, 17-21 March 1999.

Chan, Y., "Telecommunications Networks Research in AFIT" and "Network Reliability, Throughput and Gaming," Australian Defense Science & Technology Organization, Adelaide, Australia, 17-21 March 1999.

*Chan, Y., Isensee, E., and Chrissis, J., "Multi-Criteria Vehicle Routing: Security vs. Efficiency," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

Chan, Y., "Improving Telecommunications Network Performance: Reliability, Throughput And Information Security," 67th Military Operations Research Society Symposium, U. S. Military Academy, West Point, NY, 22-24 June 1999.

CHRISSIS, JAMES W. (ENS)

*Andrew, J. M., Bailey, T. G., and Chrissis, J. W., "Modeling, Simulation, and Analysis Education at the Air Force Institute of Technology," 67th Military Operations Research Society Symposium, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Payne, M. D, Chrissis, J. W., Pohl, E. A., Bowersox, R. D. W., Gruber, M. R., and Fuller, R. F., "Optimizing Scramjet Fuel Injection Array Design," 35th Joint Propulsion Conference, Los Angeles, CA, 20-23 June 1999.

*Chan, Y., Isensee, E., and Chrissis, J., "Multi-Criteria Vehicle Routing: Security vs. Efficiency," Spring National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Cincinnati, OH, May 1999.

*Fuller, D. E., Moore, J. T., Deckro, R. F., and Chrissis, J. W., "Optimizing Airborne Area Surveillance Asset Placement," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

COLLINS, Maj PETER J. (ENG)

Collins, P.J., "Electromagnetic Research at the Air Force Institute of Technology," Wright State University PhD Seminar Invited Lecture, 4 Jun 99.

*Girard, J.A., A.J. Terzuoli, Jr., and P.J. Collins, "Radar Cross Section Fluctuations Due to Dynamic Wing Flex," 45th Annual Tri-Service Radar Symposium, Monterey CA, June 1999.

CROWN, Maj JOHN S. (ENC)

Crown, J. S., "Modified Goodness-of-Fit Tests for the Weibull Distribution Using Normalized Spacings", 1999 Spring INFORMS Conference, Cincinnati, OH, May 1999.

DECKRO, RICHARD F. (ENS)

*Deckro, R. F., Kloeber, J. M., and Hebert, J., "Analysis of Risk and Uncertainty in New Product Development Projects," Fall National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Seattle WA, October 1998.

*Wilson, H., Jackson, J. A., Kloeber, J. M., Deckro, R. F., and Parnell, G. S., "Quantifying the Technological Uncertainty of DNAPL Cleanup," Fall National Meeting of INFORMS, Seattle WA, October 1998.

Deckro, R. F., "Recent IO Efforts at AFIT/ENS," IO Workshop, November 1998.

*Kerchner, P., Deckro, R. F., and Kloeber, J. M., "A Value Driven Approach for Psychological Operations," AF PSYOP Working Group Meeting, February 1999.

*Doyle, M. P., Deckro, R. F., Jackson, J. A., and Kloeber, J. M., "Value Driven Measures of Merit for Offensive Information Operations," Information Assurance Metrics Workshop, March 1999.

Deckro, R. F., "Challenges in Demonstrating Basic Research on Dynamic Planning & Execution to the Air Force," Panel Discussion, AFOSR New World Vista Meeting, May 1999.

*Fuller, D. E., Moore, J. T., Deckro, R. F., and Chrissis, J. W., "Optimizing Airborne Area Surveillance Asset Placement," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

DECKRO, RICHARD F. (ENS) (continued)

*Deckro, R. F., and Kloeber, J. M., "Road Warriors: Educating with the Virtual Research Team in Today's Global Environment," invited speakers for 1999 Teaching Effectiveness Colloquium Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

*Burke, E., Kloeber, J. M., and Deckro, R. F., "Quality Function Deployment from an Operations Research Perspective," 67th Military Operations Research Society Symposium (MORSS), U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Sperling, B., Kloeber, J. M., and Deckro, R. F., "Value-Focused Approach to Determining the Top Ten Hazards in Army Aviation," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Renfro, R., Deckro, R. F., and Kloeber, J. M., "What Makes a Man?: Modeling Considerations for Individual Behavior," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Kerchner, P., Deckro, R. F., and Kloeber, J. M., "Modeling PSYOP: A VFT Approach," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999, won best Working Group presentation.

*Romaine, J. M., Bailey, T. G., Deckro, R. F., and Carlton, W. B., "Solving the Airlift Loading Problem Using Reactive Tabu Search," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

Hebert, J. E. and Deckro, R. F., "A Multi-Dimensional Tradeoff Approach to Resource Management in a Labor Intensive Project Environment," 5th International Conference of the Decision Science Institute, Athens, July 1999.

*Deckro, R. F. and Kloeber, J. M., "Modeling Information Operations," Information Assurance Metrics Workshop, August 1999.

DELOACH, Maj SCOTT A. (ENG)

DeLoach, S.A., "Design Issues for Mixed-Initiative Agent Systems," Workshop on Mixed-Initiative Intelligence, Orlando FL, 18 Jul 99.

DeLoach, S.A., "Multiagent Systems Engineering: A Methodology and Language for Designing Agent Systems," Workshop on Agent-Oriented Information Systems (AOIS '99), May 1999.

FRANKE, MILTON E. (ENY)

Franke, M. E., "Engineering of Complex Systems for the Future," ASME International Mechanical Engineering Congress and Exposition, Anaheim, CA, Sessions on Global Technologies for the Competitive Edge, 15-20 November 1998.

Snyder, C. H., Franke, M. E., and Masquelier, M. L., "Wind Tunnel Tests of an Aircraft Turret Model," Paper No. AIAA 99-0939, AIAA 37th Aerospace Sciences Meeting & Exhibit, Reno, NV, 11-14 January 1999.

Franke, M. E., "Engineering of Complex Systems for Global Competitiveness," The Pacific Rim/ASME International Intersociety Electronic & Photonic Packaging Conference & Exhibition, InterPACK '99, Lahaina, Maui, Hawaii, 13-18 June 1999.

Endicott, T. L. and Franke, M. E., "Lean Space Launch Operations," Paper No. AIAA 99-4614, AIAA Space Technology Conference & Exposition, Albuquerque, NM, 28-30 September 1999.

GALLAGHER, Lt Col MARK A. (ENS)

*Snodgrass, A. W., Gallagher, M. A., McIntyre, G. A., and Kloeber, J. M., "Modeling Military Strategic Effects," Air Force Operations Research Symposium, Air Force Institute of Technology, Wright-Patterson AFB, OH, 23-24 September 1999.

*Snodgrass, A. W., Gallagher, M. A., and Kloeber, J. M., "Modeling Military Strategic Effects," 67th Military Operations Research Society Symposium (MORSS), U. S. Military Academy, West Point, NY, 22-24 June 1999.

Weir, J., Gallagher, M. A., Blunk, S., and Garrett, S., "Nuclear Weapon Assignment Model," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Snodgrass, A. W., Gallagher, M. A., and Kloeber, J. M., "Leontief Modeling of Military Strategic Effects," Spring National Meeting of the Institute for Operations Research and Management Sciences, Cincinnati, OH, May 1999.

GOLTZ, MARK N. (ENV)

Garrett, C.A., J. Huang, M.N. Goltz, "Optimization of *in situ* aerobic cometabolic bioremediation of trichloroethylene-contaminated groundwater," *In Situ* and On-site Bioremediation, San Diego, CA, 19-22 April 1999.

Agrawal, A., S.R. Maxwell, E.A. Nehring, M.N. Goltz, and P.L. McCarty, "Microcosm studies of trichloroethylene cometabolism in support of a field demonstration," *In Situ* and On-site Bioremediation, San Diego, CA, 19-22 April 1999.

*Bleckmann, C.A., L.M. Johnson, A.M. Halterman-O'Malley, B. Burke, D. Kellner, and M.N. Goltz, "Biodegradation of aircraft deicing agents in soils: Laboratory studies," *In Situ* and On-site Bioremediation, San Diego, CA, 19-22 April 1999.

McCarty, P.L., G.D. Hopkins, and M.N. Goltz, "Aerobic cometabolic *in situ* biodegradation of trichloroethene in groundwater," 9th Annual Meeting of Society of Environmental Toxicology and Chemistry (SETAC) Europe, Leipzig, Germany, 25 - 29 May 1999.

Gandhi, R.K., M.N. Goltz, G.D. Hopkins, S.M. Gorelick, and P.L. McCarty, "Numerical modeling of a field demonstration of *in situ* cometabolic bioremediation of trichloroethylene," American Geophysical Union Spring Meeting, Boston, MA, 31 May - 4 Jun 1999.

Goltz, M.N., "Use of horizontal cell groundwater circulation wells for remediation of anisotropic and heterogeneous aquifers," Groundwater Circulation Well Technology Evaluation and Optimization meeting, Salt Lake City UT, 2 June 1999.

*Garrett, C.A., J. Huang, M.N. Goltz, and G.B. Lamont, "Parallel real-valued genetic algorithms for bioremediation optimization of TCE-contaminated groundwater," Congress on Evolutionary Computation, Washington DC, 6-9 July 1999.

*Burke, B.W., D.L. Kellner, C.A. Bleckmann, E.C. Heyse, M.N. Goltz, "Aircraft deicing agent biodegradation in soils: Laboratory studies," Society for Environmental Toxicology and Chemistry 20th Annual Meeting, Philadelphia PA, 14 - 18 November 1999.

Gandhi, R.K., M.N. Goltz, P.L. McCarty, and S.M. Gorelick, "Design of a field demonstration of bio-enhanced in-well vapor stripping to treat trichloroethylene contamination," Partners in Environmental Technology Technical Symposium and Workshop, Arlington VA, 30 November - 2 December 1999.

GRAHAM, Maj ROBERT P. (ENG)

Young, F. C., K. Stevens, and R.P. Graham, "Timed Logic Conformance and Its Application," Proceedings of the 1999 ACM/IEEE International Workshop on Timing Issues in Specification and Synthesis of Digital Systems, Monterey CA, 8-9 Mar 99.

GUSTAFSON, STEVEN C. (ENG)

Gustafson, S.C., A.W. Learn, G.R. Little, and J.S. Loomis, "Evolutionary Data Visualization," SPIE Conference, Orlando FL, 7 Apr 99.

HARTRUM, THOMAS C. (ENG)

Hartrum, T.C. and R.C. Shock, "A Classification Approach for Software System Metrics," 11th Annual Software Technology Conference (STC), Salt Lake City UT, May 1999.

HENGHELD, ROBERT L. (ENP)

*Scott, M.B., Y.K. Yeo, R.L. Hengehold, and J.D. Scofield, "High Temperature (500 °C) Implantation Study of P⁺ and N⁻ Implanted Epitaxial N-Type 4H-SiC," presented at the 25th International Symposium on Compound Semiconductors, held on 12-16 October 1998 in Nara, Japan.

*Ahoujja, M., Y.K. Yeo, and R.L. Hengehold, "Electrical Characterization of SiGeC Films Grown on Si Substrates," presented at the March 1999 Meeting of the American Physical Society, held on 20-26 March 1999 in Atlanta, Georgia.

*Kim, Y.H., Y.K. Yeo, R.L. Hengehold, and D. K. Johnstone, "Excited States of Deep Traps in GaAs," presented at the March 1999 Meeting of the American Physical Society, held on 20-26 March 1999 in Atlanta, Georgia.

*Ahoujja, M., Y.K. Yeo, M.R. Smith, R.L. Hengehold, G.S. Pomrenke, and Jim Huffman. "Hall coefficient singularity observed from p-SiGeC grown on n-Si substrate," presented at the 26th International Symposium on Compound Semiconductors, held on 22-26 August 1999 in Berlin, Germany.

*Weeks, D.E., S.J. Novotny, S. Yang, and R.L. Hengehold, "Quantum Well Dispersion Relations," ARFL DLTR, Fort Walton Beach, FL, May 10-13 1999.

HILL, Lt Col RAYMOND R. (ENS)

Hill, R. R. "An Analytical Comparison of Optimization Problem Generation Methodologies," 1998 Winter Simulation Conference, Washington, DC, 13-16 Dec 1998.

Hill, R. R. "Some Characterizations of Synthetic Multidimensional Knapsack Problems," Spring National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Cincinnati, OH, May 1999.

*Hill, R. R., McIntyre, G. A., and Bailey, T. G., "Application of the New Sciences in Military Modeling," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

*Eravsar, M., Hill, R. R., and Moore, J. T., "A Comparison of Genetic Algorithm Performance on Synthetic Optimization Problems," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

HILL, Lt Col RAYMOND R. (ENS) (continued)

*Hill, R. R., Franzen, D. W., Kloeber, J. M., and McIntyre, G. A., "A Bayesian Decision Model for Battle Damage Assessment," 67th Military Operations Research Society Symposium (MORSS), U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Hill, R. R., Gaupp, M., and Bailey, T. G., "PICAS: Pilot Inventory Complex Adaptive System," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Hill, R. R., Tighe, T. R., and McIntyre, G. A., "Strategic Effects of Airpower and Complex Adaptive Agents: An Initial Investigation," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Hill, R. R., Walston, J., and Bailey, T. G., "Unmanned Aerial Vehicle Engagement-Level Simulation," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Hill, R. R., O'Rourke, K., Bailey, T. G., and Carlton, W., "Dynamic Routine of Unmanned Aerial Vehicles Using Reactive Tabu Search," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Hill, R. R. and McIntyre, G. A., "Application of the New Sciences in Military Modeling," Air Force Operations Research Symposium, Air Force Institute of Technology, Wright-Patterson AFB, OH, 23-24 September 1999.

HOUPIS, CONSTANTINE H. (ENG)

Houpis, C.H. and S.J. Rasmussen, "Unmanned Research Vehicle (URV): Development, Implementation, & Flight Test of a MIMO Digital Flight Control System Designed Using Quantitative Feedback Theory," NATO/RTA Systems Concepts and Integration Panel (SCI) Joint Symposium on "Advances in Vehicle Systems Concepts and Integration, Ankara, Turkey, 26-28 Apr 99.

Houpis, C.H., was invited by the National Technical University of Athens to present a three-day workshop on Quantitative Feedback Theory to the graduate students during the week of 24 May 99.

Houpis, C.H., was invited to be the Plenary Speaker at the 4th International Symposium on Quantitative Feedback Theory and Robust Frequency Domain Methods held at the University of Natal, Durban, South Africa, 26-27 Aug 99.

JODION, Maj VINCENT J. (ENP)

Jodoin, V.J. "DELFI and HPAC Cloud Rise Research," Invited, FAS/CIVIC Users' Group Conference, Colorado Springs, CO, 31 Aug – 1 Sep 1999.

JOHN, GEORGE (ENP)

John, G., "Detection of Nuclear Radiation," presented to Montgomery County High School Teachers, sponsored by the American Nuclear Society, 8 June 1999.

KLOEBER, LTC JACK M., Jr. (ENS)

*Deckro, R. F., Kloeber, J. M., and Hebert, J., "Analysis of Risk and Uncertainty in New Product Development Projects," Fall National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Seattle WA, October 1998.

*Wilson, H., Jackson, J. A., Kloeber, J. M., Deckro, R. F., and Parnell, G. S., "Quantifying the Technological Uncertainty of DNAPL Cleanup," Fall National Meeting of INFORMS, Seattle WA, October 1998.

*Piskator, G., Moore, J. T., and Kloeber, J. M., "Techniques in Using DEA to Model US Army Recruiting," Fall National Meeting of INFORMS, Seattle WA, October 1998.

*Cordeiro, J. D., Friend, M., Bauer, K. W., Miller, J. O., and Kloeber, J. M. "Using Simulation to Model Time Utilization of Army Recruiters," 37th Army Operations Research Symposium, Fort Leavenworth, KS, Oct 1998.

*Kerchner, P., Deckro, R. F., and Kloeber, J. M., "A Value Driven Approach for Psychological Operations," AF PSYOP Working Group Meeting, February 1999.

*Doyle, M. P., Deckro, R. F., Jackson, J. A., and Kloeber, J. M., "Value Driven Measures of Merit for Offensive Information Operations," Information Assurance Metrics Workshop, March 1999.

*Deckro, R. F., and Kloeber, J. M., "Road Warriors: Educating with the Virtual Research Team in Today's Global Environment," invited speakers for 1999 Teaching Effectiveness Colloquium Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

*Burke, E., Kloeber, J. M., and Deckro, R. F., "Quality Function Deployment from an Operations Research Perspective," 67th Military Operations Research Society Symposium (MORSS), U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Sperling, B., Kloeber, J. M., and Deckro, R. F., "Value-Focused Approach to Determining the Top Ten Hazards in Army Aviation," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Renfro, R., Deckro, R. F., and Kloeber, J. M., "What Makes a Man?: Modeling Considerations for Individual Behavior," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Kerchner, P., Deckro, R. F., and Kloeber, J. M., "Modeling PSYOP: A VFT Approach," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999, won best Working Group presentation.

*Szvetcz, S., Bailey, T. G., Kloeber, J. M., and Carlton, W., "The Simulation and Visualization of Airborne Operations," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999, won best Working Group presentation.

*Hill, R. R., Franzen, D. W., Kloeber, J. M., and McIntyre, G. A., "A Bayesian Decision Model for Battle Damage Assessment," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Deckro, R. F. and Kloeber, J. M., "Modeling Information Operations," Information Assurance Metrics Workshop, August 1999.

LAIR, ALAN V. (ENC)

Lair, A. V., "L'Hospital's Rule as a Test for Series Convergence," Mathematics Department Colloquium, Sinclair Community College, Dayton, OH, February 1999.

LAMONT, GARY B. (ENG)

Bohn, C. and G.B. Lamont, "Asymmetric Load Balancing on a Heterogeneous Cluster of PCs," 1999 Parallel and Distributed Processing Techniques and Applications Conference, PDPTA'99, Las Vegas NV, June 1999.

Van Veldhuizen, D.A. and G.B. Lamont, "Parallelizing the Multiple Objective Evolutionary Algorithm," 9th SIAM Conference on Parallel Processing for Scientific Computing, San Antonio TX, 22-24 Mar 99.

Marmelstein, R.E. and G.B. Lamont, "A New Approach for Evolving Clusters," 1999 ACM Symposium on Applied Computing, SAC'99, San Antonio TX, 28 Feb-2 Mar 99.

Van Veldhuizen, D.A., R.E. Marmelstein, and G.B. Lamont, "A Distributed Architecture for an Adaptive Computer Virus Immune System, 1998 IEEE International Conference on Systems, Man, and Cybernetics, SMC'99, San Diego CA, October 1999.

LIEBST, BRADLEY S. (ENY)

Liebst, B. S. and Saad A., "Prediction and Analysis of Wing Rock Using a Simple Analytic Parameter", 1999 Dayton-Cincinnati Aerospace Science Symposium, Dayton, OH, 7-9 April 1999.

*Swenson, E. D., Turcotte, J. S., Liebst, B. S., Arb, H. A., "Damage Detection Using Pattern Classifiers", SEM Annual Conference on Theoretical, Experimental and Computational Mechanics, Cincinnati, OH, 7-9 June, 1999.

Liebst, B. S. and Saad A., "An Analytic Criterion for the Prediction and Analysis of Wing Rock Onset", 1999 AIAA Atmospheric Flight Mechanics Conference, Portland, OR, 9-11 August 1999.

LOTT, Maj JAMES A. (ENG)

Lott, J.A., "Progress in Red Vertical Cavity Surface Emitting Lasers," 7th International Symposium Nanostructures: Physics and Technology, St Petersburg, Russian Federation, 14-18 Jun 99.

Lott, J.A., N.N. Ledentsov, V.M. Ustinov, Zh. I. Alferov, and D. Bimberg, "Long Wavelength (1.3 μ m) Quantum Dot Vertical Cavity Surface Emitting Lasers Grown Directly on GaAs Substrates," Advanced Workshop on Frontiers in Electronics, Villard de Lans, Grenoble, France, 31 May- 4 Jun 99.

Noble, M.J., J.P. Loehr, and J.A. Lott, "Semi-Analytic Calculation of Diffraction Losses and Threshold Currents in Microcavity VCSELs," IEEE Lasers and Electro-Optics Society Annual Meeting, Orlando FL, 01-04 Dec 98.

Noble, M.J., J.P. Loehr, and J.A. Lott, "Comprehensive Design Study of Low-Threshold Microcavity VCSELs," Photonics West '99, San Jose CA 23-29 Jan 99.

Noble, M.J., J.P. Loehr, and J.A. Lott, "Comparison of Optical Analysis Methods for Oxide-Apertured VCSELs," Photonics West '99, San Jose CA, 23-29 Jan 99.

Noble, M.J., J.A. Lott, and P. Sotirelis, "Overview of Air Force In-House VCSEL Modeling Work," IEEE Summer Topicals, San Diego CA, 26-30 Jul 99.

Noble, M.J., P. Sotirelis, J.A. Lott, and J.P. Loehr, "Microcavity Surface Emitting Laser Simulation Using Vector Finite Elements," 1999 DoD HPCMP (High Performance Computing Modernization Program, Users Group Conference, Monterey CA, 7-10 Jun 99.

MAGEE, Maj ERIC P. (ENG)

Magee, E.P. and T.J. Kane, "Bistatic Coherent Laser Radar Performance: CW SNR Calculations," 10th Biennial Coherent Laser Radar Technology and Applications Conference, Mt Hood OR, Jun 99.

MALL, SHANKAR (ENY)

Lykins, C. and Mall, S., "High cycle Fretting Fatigue Behavior of Ti-6-4", Proc. of The Seventh International Fatigue Conference, June 8-12, 1999, Beijing, China.

Mall, S. and Hsu, T. L., "Electromechanical Fatigue behavior of Graphite/Epoxy Laminate Embedded with Piezoelectric Actuator", Proc. of 6th Annual International Symposium on Smart Structures and Materials, 770-779, Newport Beach, CA, 1-5 March 1999.

Iyer, K. and Mall, S., "Fretting Fatigue of Ti-6AL-4V under Variable-Amplitude Loading", Proc. of 4th National Turbine Engine High Cycle Fatigue Conference, Feb. 9-11, 1999, Monterey, CA.

Hamrick, J. L., Mall, S. and Nicholas, T., "High Cycle Fatigue Life of Ti-6AL-4V after being Subjected to Foreign Object Damage", Proc. of 4th National Turbine Engine High Cycle Fatigue Conference, Feb. 9-11, 1999, Monterey, CA.

Al-Hussien, M., Mall, S. and Calcaterra, J. R., "Monotonic and Fatigue Loading Behavior of a 2-D Woven Ceramic Matrix Composite at Room and Elevated Temperatures," Proc. of 12th International Conference on Composite Materials, 6-9 July 1999, Paris.

Gao, X. L. and Mall, S., "A Generic Micromechanics Model for Planar Woven fabric Composites", Proc. of American Society for Composites Fourteenth Technical Conference, Dayton, OH, 917-926, MD, Sept. 27-29, 1999.

Mall, S., "Structural Integrity of Composite Structures Embedded with Piezoelectric Actuators", Proc. of International Conf. On Smart Materials, Structure and Systems, Bangalore, India, 7-10 July 1999.

MAYBECK, PETER S. (ENG)

Hanlon, P.D. and P.S. Maybeck, "Characterization of Kalman Filter Residuals in the Presence of Mismodeling," 1998 Conference on Decision and Control, Tampa FL, December 1998.

Hanlon, P.D. and P.S. Maybeck, "Multiple-Model Adaptive Estimation Using Residual Correlation Kalman Filter Bank," 1998 Conference on Decision and Control, Tampa FL, December 1998.

Vasquez, J.R. and P.S. Maybeck, "Enhanced Motion and Sizing of Bank in Moving-Bank MMAE," 1999 American Control Conference, San Diego CA, June 1999.

Vanek, B.J., P.S. Maybeck, and J.F. Raquet, "GPS Signal Offset Detection and Noise Strength Estimation in a Parallel Kalman Filter Algorithm," 1999 ION GPS-99 Conference, Nashville TN, September 1999.

McINTYRE, Lt Col GREGORY A. (ENS)

*Hill, R. R., McIntyre, G. A., and Bailey, T. G., "Application of the New Sciences in Military Modeling," Spring National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Cincinnati, OH, May 1999.

McIntyre, G. A. and Nelson, F. N., "Intelligence, Surveillance, and Reconnaissance (ISR) in Campaign-Level Simulations," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

McINTYRE, Lt Col GREGORY A. (ENS) (continued)

*Hill, R. R., Franzen, D. W., Kloeber, J. M., and McIntyre, G. A., "A Bayesian Decision Model for Battle Damage Assessment," 67th Military Operations Research Society Symposium (MORSS), U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Hill, R. R., Tighe, T. R., and McIntyre, G. A., "Strategic Effects of Airpower and Complex Adaptive Agents: An Initial Investigation," 67th MORSS, U. S. Military Academy, West Point, NY, 22-24 June 1999.

*Hill, R. R. and McIntyre, G. A., "Application of the New Sciences in Military Modeling," Air Force Operations Research Symposium, Air Force Institute of Technology, Wright-Patterson AFB, OH, 23-24 September 1999.

MILLER, Lt Col JOHN O. (ENS)

Miller, J. O. "A New Sequential Goodness-of-Fit Test for the Three-Parameter Weibull Distribution with Known Shape Based on Skewness and Kurtosis," Spring National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Cincinnati, OH, May 1999.

*Cordeiro, J. D., Friend, M., Bauer, K. W., Miller, J. O., and Kloeber, J. M. "Using Simulation to Model Time Utilization of Army Recruiters," 37th Army Operations Research Symposium, Fort Leavenworth, KS, Oct 1998.

MILLER, Lt Col MIKEL M. (ENG)

Johnston, K.D., "A Comparison of CW and Swept CW Effects on a C/A Code GPS Receiver," 11th ION GPS-99, Nashville TN, 14-17 Sep 99. (This was a student paper, thus only the student's name could be on it).

Miller, M.M., "An Integrated SAR/GPS/INS for Target Geolocation Improvement," 55th Annual Meeting, Cambridge MA, 28-30 Jun 99.

MOORE, JAMES T. (ENS)

*Piskator, G., Moore, J. T., and Kloeber, J. M., "Techniques in Using DEA to Model US Army Recruiting," Fall National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Seattle WA, October 1998.

*Eravasar, M., Hill, R. R., and Moore, J. T., "A Comparison of Genetic Algorithm Performance on Synthetic Optimization Problems," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

*Fuller, D. E., Moore, J. T., Deckro, R. F., and Chrissis, J. W., "Optimizing Airborne Area Surveillance Asset Placement," Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

*Ryer, D. M., Bailey, T. G., Moore, J. T., and Carlton, W. B., "Route Selection for the Mobility Analysis Support System Using Tabu Search," 67th Military Operations Research Society Symposium (MORSS), U. S. Military Academy, West Point, NY, 22-24 June 1999.

MURDOCK, Maj W. PAUL (ENS)

Tran, T.H., Murdock, W.P., and Pohl, E.A., "Bayesian Analysis for System Reliability Inferences," International Reliability and Maintainability Symposium, Washington, DC, January 1999.

Betts, M.K. and Murdock, W.P., "Applying Value-Focused Thinking To Eliminating Enemy Satellite Capabilities," Spring National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), Cincinnati, OH, May 1999.

OXLEY, MARK E. (ENC)

Oxley, M. E., "Evaluating the Vapnik-Chervonenkis Dimension of a set of Artificial Neural Networks using the Poincare Polynomial", SPIE AeroSense'99, Orlando FL, 5 April 1999.

Oxley, M. E., "Evaluating the VC Dimension using the Poincare Polynomial", Colorado State University, Mathematics Seminar, 18 May 1999.

Oxley, M. E., "Whitney Reduction Networks for Process Discovery", Second International Conference on Intelligent Processing and Manufacturing of Materials, Honolulu, HI, 15 July 1999.

PACHTER, MEIR N. (ENG)

Pachter, M., "Kalman Filtering Concept for Adaptive Optics," ABL Advanced Concepts Workshop, AFRL/DEBA, Kirtland AFB NM, 1 Sep 99.

Pachter, M., "An Algorithm for Control System Loop Gain Identification," Mediterranean Control Conference, Haifa, Israel, 28-30 Jun 99.

Pachter, M. and M. Oppenheimer, "Algorithm Development for On-Line Control of the ABL," 1999 AeroSense Conference, Orlando FL, 5-9 Apr 99.

Chandler, P. and M. Pachter, "Parameter Estimation for Over-Actuated Aircraft with Nonlinear Aerodynamics," 1999 AIAA Guidance, Navigation and Control Conference, Portland OR, 9-11 Aug 99.

McNamee J. and M. Pachter, "Efficient Nonlinear Reference Governor Algorithm for Constrained Tracking Control Problem," American Control Conference, San Diego CA, 2-4 Jun 99.

PERRAM, Lt Col GLEN P. (ENP)

R.F. Franklin and G.P. Perram, "Laser Excitation Spectra and Franck-Condon Factors for $\text{Bi}_2 \text{X}^1\Sigma_g^+ - \text{A}0_u^+$ " International Symposium on Molecular Spectroscopy 54th Meeting, Columbus, OH, June 1999.

M.D. Dolezal and G.P. Perram, "Predissociative Rate Constants for $\text{Bi}_2(\text{A})$ from Pulsed Dye Laser Lifetime Data", International Symposium on Molecular Spectroscopy 54th Meeting, Columbus, OH, June 1999.

PYATI, VITTAL P. (ENG)

Mediavilla, R., W. O'Connor, and V.P. Pyati, "Terrain Backscatter Coefficient Generator," EMCC Annual Meeting, HRL Laboratories, Malibu CA, April 1999.

QUINN, DENNIS W. (ENC)

Hemmes, J. M., D. W. Quinn, and J. M. McDougal, "Modeling Chemical Absorption Through Membranes," Conference on Topics in Toxicology and Risk Assessment, Hope Hotel and Conference Center, Wright-Patterson AFB, OH, April, 1999.

RAQUET, Capt JOHN F. (ENG)

*Vanek, B.J., P.S. Maybeck, and J.F. Raquet, "GPS Signal Offset Detection and Noise Strength Estimation in a Parallel Kalman Filter Algorithm," 1999 ION GPS-99 Conference, Nashville TN, September 1999.

ROH, WON B. (ENP)

B. C. Rodgers, T. H. Russell, and W. B. Roh, "Coherent and Incoherent Beam Combining and Cleanup via Stimulated Brillouin Scattering in Multi-mode fiber," Presented at CLEO-Pacific Rim '99, Seoul, Korea, 31 Aug - 3 Sep 1999.

B. C. Rodgers, T. H. Russell, and W. B. Roh, "Semiconductor Laser Beam Combining and Cleanup via Stimulated Brillouin Scattering in Multi-mode fiber," Invited presentation at the 1999 Diode Laser Technology Review, Fort Walton Beach, FL, 11-14 May 1999.

SPENNY, CURTIS H. (ENY)

Spenny, C.H. "Telerobotics," Presentation to the Honor Seminars of Metropolitan Dayton, February 18, 1999 and December 2, 1999.

TALBERT, Maj MICHAEL L. (ENG)

Talbert, M.L., "Summary of Research," Presentation of UAV video segmentation and scene semantics detection algorithm to AFRL/IFEC, 3 March 1999.

Talbert, M.L., "AFIT C.E.N.T.R.A.L. Database System," AFIT C.E.N.T.R.A.L. is the Consolidated EN Tracking and Reporting of Academic Labors database system based on an amalgam of work done by Gregg and Jason Gunsch, Gaby Pollack, Dan DiPiro, Alex Lee, Penelope Noe, Jason Ward and Michael Talbert. Presented to AFIT Command Group and Staff, November 10, 1999.

TERZUOLI, ANDREW J., JR. (ENG)

Girard, J.A., A.J. Terzuoli, Jr., and P.J. Collins, "Radar Cross Section Fluctuations Due to Dynamic Wing Flex," 45th Annual Tri-Service Radar Symposium, Monterey CA, June 1999.

Eigel, Jr., R.L. and A.J. Terzuoli, Jr., "Biostatic Radar Cross Section of Complex Objects," 1999 IEEE/APS International Symposium, Orlando FL, 11-16 Jul 99.

Eigel, Jr., R.L. and A.J. Terzuoli, Jr., "Bistatic Scattering from Complex Objects," XXVIth General Assembly, Toronto, ON, Canada, 13-21 Aug 99.

Utton, T.S. and A.J. Terzuoli, Jr., "Application of the Finite Difference Time Domain (FDTD) Technique to the Analysis and Design of Transverse Electromagnetic (TEM) Horns," XXVIth General Assembly, Toronto, ON, Canada, 13-21 Aug 99.

*Cochran, J.G., P.J. Collins, A.J. Terzuoli, Jr., and E.A. Mendez, "Scattering from Bubbles in Radar Absorbing Material," 45th Annual Tri-Service Radar Symposium, Monterey CA, June 1999.

TERZUOLI, ANDREW J., JR. (ENG) (continued)

Eigel, R. L, Jr., A.J. Terzuoli, Jr., and G. Nesti, "Bistatic Radar Cross Section of Complex Objects," 1999 International Geoscience and Remote Sensing Symposium, Hamburg, GE, 28 Jun-2 Jul 99.

TURCOTTE, Lt Col JEFFREY S. (ENY)

J. S. Turcotte, "A Coupled Plate Model of a Bladed Disk Assembly," 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, June 20-23, 1999, Los Angeles, CA, paper no. AIAA-99-2809.

WALTERS, Lt Col MICHAEL K. (ENP)

Russ, Robert L., D. Dean, and M.K. Walters: Analyzing the Planetary Boundary Layer in Transport and Diffusion Atmospheric Modeling: A Four Algorithm Comparison. Air and Waste Management Association 92nd Annual Meeting, June 1999.

WEEKS, DAVID E. (ENP)

T.A. Niday and D.E. Weeks, "Scattering Matrix Elements for the Fine Structure Transition $B(^2P_{1/2}) + H_2(j=0) \rightarrow B(^2P_{3/2}) + H_2(j=0)$," AFOSR HEDM Contractors Conference, Cocoa Beach FL, June 7 - 11, 1999.

*D.E. Weeks, S.J. Novotny, S. Yang, and R.L. Hengehold, "Quantum Well Dispersion Relations," AFRL DLTR, Fort Walton Beach, FL, May 10-13 1999.

T.A. Niday and D.E. Weeks, "Inelastic Scattering Matrix Elements for the reaction $B(^2P_{1/2}) + H_2(j) \leftrightarrow B(^2P_{3/2}) + H_2(j)$," Fall OSAPS meeting, Akron OH, Oct 16 - 17, 1998.

WOLF, Lt Col PAUL J. (ENP)

J.C. Holtgrave and P.J. Wolf, "Collisional broadening and shift of Sr lines by the rare gases," APS Centennial Meeting, 25 March, 1999, Atlanta, GA.

WOOD, AIHUA W. (ENC)

Wood, A. W., "Existence of Entire Large Positive Solutions of Elliptic Systems," AMS Southeast Section Meeting, Special Session on Partial Differential Equations, Gainesville, FL, March 1999.

Wood, A. W., "Electromagnetic Scattering from Cavities," Mathematics Department Applied Mathematics Seminar, Tulane University, New Orleans, LA, April 1999.

Wood, A. W., "Integral Equation Methods for Scattering Problems," Applied Mathematics Seminar, Ohio State University, Columbus, OH, May 1999.

Wood, A. W., "Scattering and Propagation of Electromagnetic Waves," Mathematics Department Applied Mathematics Seminar, University of Strathclyde, Glasgow, Scotland UK, June 1999.

Wood, A. W., "Analysis of Electromagnetic Scattering from a Cavity," AFIT/ENC Mathematics and Applications Group Seminar, June 1999.

Wood, A. W., "Electromagnetic Scattering from a 2-D Trough in a Ground Plane," Applied Mathematics Seminar, Michigan State University, East Lansing, MI, September 1999.

YEO, YUNG KEE (ENP)

*Scott, M.B., Y.K. Yeo, R.L. Hengehold, and J.D. Scofield, "High Temperature (500 °C) Implantation Study of P^+ and N^+ Implanted Epitaxial N-Type 4H-SiC," presented at the 25th International Symposium on Compound Semiconductors, held on 12-16 October 1998 in Nara, Japan.

*Ahoujja, M., Y.K. Yeo, and R.L. Hengehold, "Electrical Characterization of SiGeC Films Grown on Si Substrates," presented at the March 1999 Meeting of the American Physical Society, held on 20-26 March 1999 in Atlanta, Georgia.

*Kim, Y.H., Y.K. Yeo, R.L. Hengehold, and D. K. Johnstone, "Excited States of Deep Traps in GaAs," presented at the March 1999 Meeting of the American Physical Society, held on 20-26 March 1999 in Atlanta, Georgia.

*Ahoujja, M., Y.K. Yeo, M.R. Smith, R.L. Hengehold, G.S. Pomrenke, and Jim Huffman. "Hall coefficient singularity observed from p-SiGeC grown on n-Si substrate," presented at the 26th International Symposium on Compound Semiconductors, held on 22-26 August 1999 in Berlin, Germany.

3.14 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

AGNES, Capt GREGORY S. (ENY)

Session Chair, 1998 International Mechanical Engineering Conference and Exposition, Anaheim, CA.

Session Chair, 1999 Smart Materials and Structures Conference, Newport Beach, CA.

Session Chair, 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, St. Louis, MO.

Session Chair, 17th Biennial Conference on Mechanical Vibration and Noise, Las Vegas, NV.

BAILEY, Lt Col T. GLENN (ENS)

Chair, Utilizing Java in Operations Research, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

Chair, Military Applications, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

BROTHERS, Maj CHARLES P., JR. (ENG)

Member, Awards Committee for the 1999 IEEE Nuclear and Space Radiation Effects Conference.

CHAN, YUPO (ENS)

Local Organizing Committee, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

Chair, Ethics Committee, Military Operations Research Society.

National Secretary, Omega Rho International Honor Society.

Editorial board, Phalanx.

Associate editor, Naval Research Logistics.

Associate editor, Military Operations Research.

Associate editor, UPDD Journal.

AFIT University Representative, Transportation Research Board, National Research Council.

CHRISSIS, JAMES W. (ENS)

Secretary, Cincinnati/Dayton INFORMS Chapter.

CROWN, Maj JOHN S. (ENC)

Chair, Statistics: Goodness-of-Fit Tests Session of the 1999 Institute for Operations Research and the Management Sciences Spring Conference.

DECKRO, RICHARD F. (ENS)

Associate Editor, Military Operations Research.

Editorial Advisory Board, Computer and Operations Research.

Editorial Advisory Board, IEEE Transactions on Engineering Management.

Co-Chair, Information Operations/Warfare Working Group, Military Operations Research Society (MORS).

Guest Editor, special issue of Military Operations Research, "Operations Research Methods for Information Operations: A Battlespace of the 21st Century" (in progress).

Member, INFORMS Finance Committee.

Chair, INFORMS Bylaws, Policies & Procedures Committee.

Member, INFORMS Subdivisions Committee (Chair, Section/Societies Subcommittee).

Member, Local Committee, Cincinnati Spring 1999 INFORMS Meeting (Co-Chair Invited Sessions).

President, Cincinnati/Dayton INFORMS Chapter.

Track Chair, Production and Operations Management, Western DSI 28th Meeting, April 1999.

DELOACH, Maj SCOTT A. (ENG)

Program Committee, Workshop on Autonomous Software Metrics at Autonomous Agents '99 (AGENTS 99) Seattle WA, 1 May 99.

GALLAGHER, Lt Col MARK A. (ENS)

Director, Military Operations Research Society (MORS).

Chair, MORS Prize Committee.

GOLTZ, MARK N. (ENV)

Member, Science Advisory Committee, U.S. EPA's Great Lakes/Mid-Atlantic Hazardous Substance Research Center.

City of Beavercreek Environmental Advisory Committee.

Consulting Associate Professor at Stanford University.

GUSTAFSON, STEVEN C. (ENG)

Associate Editor of the journal, Optical Engineering

HENGHOLD, ROBERT L. (ENP)

Conference co-chairman, Fall 1999 Meeting of the Ohio Section of the American Physical Society held in Dayton Ohio on 8-9 October 1999.

HILL, Lt Col RAYMOND R. (ENS)

Treasurer, Cincinnati/Dayton INFORMS Chapter.

Reviewer for Military Operations Research .

Reviewer for Naval Research Logistics.

Cluster Chair, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

KLOEBER, LTC JACK (ENS)

Chair, Decision Analysis Working Group, Military Operations Research Society (MORS) Symposium, 1999.

Director, Military Operations Research Society .

Associate Editor, Military Operations Research .

Prize Committee Member, MORS.

Education Committee Member, MORS.

Publicity Chair, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

LOTT, Maj JAMES A. (ENG)

Lott, J.A., received the 1999 IEEE Dayton Section Harrell V. Noble Award for contributions in electron device research.

Lott, J.A., was named an "Eminent Engineer" by the Tau Beta Pi National Engineering Honor Society.

Lott, J.A., became a Senior Member of IEEE.

MAYBECK, PETER S. (ENG)

Maybeck, P.S., Air Force Materiel Command IDEA Award for research associated with the published scientific paper, "Interrelationship of Single-Filter and Multiple-Model Adaptive Algorithms," coauthored with P.D. Hanlon, March 1999.

Maybeck, P.S., Air Force Materiel Command IDEA Award for research associated with the published scientific paper, "Performance Enhancement of a Multiple Model Adaptive Estimator," coauthored with P.D. Hanlon, March 1999.

Maybeck, P.S., M. Barry Carlton Award for outstanding technical article published in the *IEEE Transactions on Aerospace and Electronic Systems*, 1999.

Vanek, B.J., P.S. Maybeck, and J.F. Raquet won the award for the best paper, "GPS Signal Offset Detection and Noise Strength Estimation in a Parallel Kalman Filter Algorithm," in the "Military & Commercial Applications Fusion" session at the Institute of Navigation's GPS '99 Conference, Nashville TN, September 1999.

MILLER, Lt Col, MIKEL M. (ENG)

Thesis student, K.D. Johnston, received 99 ION best student paper award – he received an all expense paid trip to 99 ION to present the paper. The paper also won the best paper in the session.

MOORE, JAMES T. (ENS)

Expert Associate Editor, Military Operations Research .

MURDOCK, Maj W. PAUL (ENS)

Session chair, 1999 Reliability and Maintainability Symposium (RAMS).

Session chair, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

NIXON, Lt Col WM. BRENT (ENV)

Chair, Air and Waste Management Association's Technical Committee on Landfill and Composting.

OXLEY, MARK E. (ENC)

Oxley, M. E., Served as Alumni Board Member for Department of Mathematics, Physics and Geography, Cumberland College, Williamsburg, KY.

PACHTER, MEIR N. (ENG)

Pachter, M., Associate Editor of the *Journal of Optimization Theory and Applications*.

Pachter, M., Session Chairman at the IEEE Conference on Decision and Control, Tampa FL, 16-18 Dec 98.

Pachter, M., Session Chairman at the IEEE Mediterranean Control Conference, Haifa, Israel, 28-30 Jun 99.

RAINES, Maj RICHARD A. (ENG)

Raines, R.A., received the Meritorious Service Medal.

Raines, R.A., Reviewer for IEEE Communications Newsletter.

Raines, R.A., Reviewer for Computer Simulation.

RAQUET, Capt JOHN F. (ENG)

Raquet, J.F. served as the Program Chair for the Institute of Navigation Annual Meeting and was responsible for putting together the technical program.

*Vaneck, B.J., P.S. Maybeck, and J.F. Raquet won the award for the best paper, "GPS Signal Offset Detection and Noise Strength Estimation in a Parallel Kalman Filter Algorithm," in the "Military & Commercial Applications Fusion" session at the Institute of Navigation's GPS '99 Conference, Nashville TN, September 1999.

WEEKS, DAVID E. (ENP)

Program chairman for fall meeting of Ohio Section of the American Physical Society held in Dayton Ohio on 8-9 Oct 99.

SECTION 4

GRADUATE SCHOOL OF LOGISTICS AND ACQUISITION MANAGEMENT

4.0 OVERVIEW

Since 1992, the mission of the Graduate School of Logistics and Acquisition Management (AFIT/LA) has been to provide uniquely defense-oriented graduate education in logistics and acquisition management to Air Force and DOD leaders. Through high quality graduate instruction, research and consultation, AFIT/LA provided management knowledge and tools to solve defense logistics and acquisition problems. During Fiscal Year 1999 AFIT/LA focused its educational efforts in acquisition logistics, logistics management, contracting management, cost analysis, information resource management, systems management, software systems management, transportation management, and air mobility. A total of 48 masters' degree students graduated from AFIT/LA programs this fiscal year; they generated 42 theses and graduate research papers addressing issues in core competency areas of logistics processes, improved business practices, software calibration, international logistics, human resources management, operational analysis, and modeling and simulation. Awards for the most outstanding theses went to Captain Gregory Hutson, for his thesis, "Reparable Inventory Reduction Impacts on Air Force Fighter Aircraft Mission Capability," Captain Robert J. Neal, for his thesis, "Cost/Benefit Analysis of Leasing vs. Buying Air Force General Purpose Vehicles," and Major Jorge Guarnieri of the Argentine Air Force for his thesis, "Maintenance Resources Evaluation Technique."

The Master of Mobility program, which was developed at the request of AMC in 1995 to provide Air Mobility Warfare students with a graduate degree in mobility management in conjunction with air warfare concepts, graduated its fifth class of twelve students in June of 1999. The Air Mobility program continued to feature a number of innovations, including the concept of a dual campus operation (Ft Dix NJ and WPAFB), satellite-based distance education, and adjustable course length. Research projects undertaken by the Advanced Studies of Air Mobility (ASAM) students included assessment of cargo and refueling doctrine, more effective scheduling of aircraft, greater cargo visibility, strategic fuel resources, cyberterrorism, transportation of munitions, and reactions to chemical warfare threats in advanced operating locations.

As a result of the decision to close the Graduate School of Logistics and Acquisition Management and merge its programs with those of the Graduate School of Engineering, a decision that had been made during the previous fiscal year, a number of steps were instituted to bring about the necessary downsizing. These included reduction of staff, reassignment of some faculty, and retirements of others. Long-time staff members who left during the year included Ms. Nancy Wiviott, Ms. Mary Ann Klos, Ms. Karen Wyatt, and Ms. Willa Quarmiley. Civilian faculty who retired by the end of the fiscal year included Dr. Anthony D'Angelo, Dr. Leroy Gill, Dr. Freda Stohrer, Dr. Norman Ware, and Dr. Guy Shane. Military faculty who transferred to other locations included Lieutenant Colonels Terry Adler and Karen Currie; Lieutenant Colonel Rick L'heureux retired. Majors Daryl Hauck, Kevin Moore, and William Scott moved on to other assignments. During this difficult time the school continued to provide excellent teaching and research efforts under the strong but caring leadership of Dean Jan Muczyk and Associate Dean Lieutenant Colonel Karen Currie. At the end of the fiscal year, his job at AFIT concluded, Dr. Muczyk continued on to new challenges by accepting a position as Dean of the College of Commerce and Economics at Sultan Qaboos University, in the Sultanate of Oman. New faculty members included Major Stephan Brady and Lieutenant Colonels William Stockman and Brad Ayers.

Faculty research productivity in the school declined as downsizing occurred. However, important faculty research was conducted in the areas of operations and productions management, transportation processes, software development processes, purchasing, and education and training. In spite of the austere environment, the 22 faculty members assigned to the school generated thirteen refereed journal articles and

twelve other publications, and they participated in twenty academic and professional presentations. Those sixteen faculty members who were transferred to the new Graduate School of Engineering and Management faced a new challenge of ensuring continuity and responsiveness to Air Force needs in the programs they brought with them in the new school.

4.1 DEPARTMENT SYMBOLS AND LOCATIONS

The Graduate School of Logistics and Acquisition Management (LA) was located in Building 641, 2950 P Street, Wright-Patterson AFB OH, 45433-7765. For the final year of its operation, these personnel were associated with the offices and departments indicated:

Symbol	School Office/Department	Room
LA	Office of the Dean Dr. Jan P. Muczyk, Dean Lt Col Karen Currie, Associate Dean (Sep-Aug) Lt Col David Petrillo (Aug-Sep)	328
LAA	Graduate Program Office MSgt Jimmie Johnson (Oct-Jan) SSgt Kelly L. Schell (Jan-Sep) Mr. Harry Peterman, Resource Advisor	316
LAC	Assistant Dean for Research and Consulting Dr. David K. Vaughan Ms. Nancy I. Wiviott, Thesis Program Assistant (Oct-Mar)	324
LAL	Department of Graduate Logistics Management Dr. William A. Cunningham	324
LAS	Department of Graduate Acquisition Management Lt Col Richard L'heureux (Sep-July) Lt Col David Petrillo (July-Aug) Lt Col William Stockman (Aug-Sep)	302

4.2 AREAS OF PROFESSIONAL COMPETENCE

Acquisition Management: Ware, Moore, Petrillo
Acquisition Reform: L'heureux, Petrillo
Activity-Based Costing: Caudle
Application of Technology: Heminger, Morris, Srivastava
Acquisition Logistics: Currie, Scott
Budgeting: D'Angelo, Caudle, Stockman
Business Policy: Muczyk, Adler
Buyer-Seller Relationships: L'heureux, Moore
Commercial Business Practices: Petrillo
Computer Graphics: Heminger, Morris, Biros
Computer Infrastructure Design: Heminger, Morris, Biros
Computer Networking: Heminger, Morris, Biros
Contract Management: Petrillo
Contract Negotiation: L'heureux, Petrillo, Stockman
Contracting: L'heureux, Moore, Petrillo, Stockman
Cost Accounting: Caudle, Stockman
Cost Analysis: Cunningham, Stockman
Cost Estimating: Stockman, Caudle
Data Communications: Heminger, Morris, Biros
Database Applications: Heminger, Morris, Biros
Database Theory: Heminger, Morris, Biros
Depot Management: Arostegui, Swartz
Earned Value Methods: Caudle, Stockman
Economic Analysis: Cunningham
Electronic Commerce: Currie, Scott, Heminger
Ergonomics/Human Factors: Shane
Ethics: Vaughan
Expert Systems: Heminger, Morris, Biros
Federal Financial Management Systems: D'Angelo, Caudle
Forecasting: Ware, Moore, Stockman
Foreign Military Sales: Cunningham
Group Support Systems: Heminger, Morris, Biros
Human Resources Management: Steel, Muczyk, Shane
Industrial Engineering: Johnson
Information Management: Heminger, Morris, Biros
Information Resource Management: Heminger, Morris, Biros
International Logistics: Currie, Cunningham
Inventory Management: Currie, Cunningham, Srivastava, Swartz, Johnson
Just-in-Time Manufacturing: Cunningham, Srivastava
Leadership: Shane, Thurston, Rehg, Ward
Learning Curves: Ware, Stockman, Caudle
Logistics Financial Management: Moore
Logistics Management: Currie, Cunningham, Srivastava, Moore, Swartz, Arostegui, Johnson
Maintainability and Supportability: Srivastava, Swartz, Johnson, Arostegui
Management Information Systems: Scott, Heminger, Morris, Biros
Manufacturing Management: Swartz, Arostegui, Johnson
Modeling: Johnson, Arostegui, Swartz
Operations/Production Management: Currie, Srivastava, Ware, Swartz, Johnson, Arostegui
Operations Research: Johnson, Brady, Swartz, Arostegui
Organizational Behavior: Steel, Muczyk, Shane, Thurston, Rehg, Ward
Organizational Learning: Thurston, Rehg, Ward
Performance Measurement: Shane, Thurston, Rehg, Ward

Program Evaluation: Rehg, Thurston, Ward
Project Management: Caudle, Petrillo
Psychometric Theory: Thurston, Rehg
Public Policy Analysis: Cunningham
Quality Management: Ware, Caudle
Regression Modeling: Cunningham, Shane, Rehg, Thurston, Ward
Reliability: Rehg, Thurston, Ward
Research Methods: Shane, Steel, Vaughan, Thurston, Ward, Rehg
Risk Analysis: Caudle, Stockman
Scheduling: Rehg, Ward, Thurston
Simulation: Johnson, Arostegui, Swartz
Software Management: Ayers
Software Measurement: Ayers
Software Product Assurance: Ayers
Software Size and Cost Estimation: Ayers
Strategic Management: Muczyk, Rehg, Thurston, Ward
Strategic Planning: Heminger
Technical Communication: Stohrer, Vaughan
Technology in Education: Heminger, Morris, Biros
Technology Management: Stockman
Technology Transfer: Stockman
Test and Survey Development: Shane, Steel, Rehg, Ward, Thurston
Theory of Constraints: Johnson
Time Series Analysis: Johnson, Rehg
Training and Education: Vaughan, Muczyk
Vocational Placement: Rehg, Ward, Thurston
Warehousing: Swartz, Arostegui

4.3 FACULTY CREDENTIALS

ADLER, TERRY R., Lt Col, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Management, United States Air Force Academy, 1981; M.B.A., General Management, Boston College, 1986; Ph.D., Business Policy and Strategy, University of Cincinnati, 1996. Reassigned, 1999.

AROSTEGUI, MARVIN A., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Applied Mathematics, University of California at Berkeley, 1987; M.S., Logistics Management, Air Force Institute of Technology, 1992; Ph.D., Business Administration, University of Houston, 1997. Research interests include reparable inventory management, supply chain management, meta-heuristics (tabu search, simulated annealing, and genetic algorithms). Reassigned to the Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4333. E-mail: marvin.arostegui@afit.af.mil

BIROS, DAVID P., Maj, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., History and Secondary Education, Flagler College, 1985; M.A., Public Administration, Troy State University, M.S., Information Resource Management, Air Force Institute of Technology, 1992; Ph.D., Information and Management Sciences (minor concentration in Strategy), Florida State University, 1998. Research interests include deception via information artifacts, deception detection, information assurance, and the diffusion of technology. Reassigned to the Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4826. E-mail: david.biros@afit.af.mil

BRADY, STEPHAN P., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Political Science, Western Maryland College, 1985; M.P.A., Public Administration, New Hampshire University, 1994; M.S., Logistics Management, Air Force Institute of Technology, 1992; Ph.D., Business Administration, Pennsylvania State University, 1999. Research interests include transportation, logistics and supply chain management, consumable and reparable inventory management, simulation, and modeling. Reassigned to the Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4367. E-mail: stephan.brady@afit.af.mil

BRANDT, CRAIG M., Associate Professor and Head, Department of Graduate Logistics Management (AFIT/LAL). B.A., Economics, Rice University, 1964; M.G.A., Governmental Administration, Wharton School, University of Pennsylvania, 1975; M.A., Secondary Education, Wright State University, 1981; Ph.D., Political Science and Public Administration, University of Cincinnati, 1985. Reassigned to DISAM, 1998.

CAUDLE, MARK D., Maj, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., Mathematics, University of North Carolina at Chapel Hill, 1984; M.S., Systems Management, Air Force Institute of Technology, 1991; M.A., Business Administration, Ohio State University, 1996; PhD, Ohio State University, 1999. Specialties include total quality management, financial management. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4316. E-mail: mark.caudle@afit.af.mil

CUNNINGHAM, WILLIAM A. III, Professor and Head, Department of Graduate Logistics Management (AFIT/LAL). B.S., Business Administration, Missouri Southern State College, 1976; M.S., Economics, Oklahoma State University, 1979; Ph.D., Economics, University of Arkansas, 1986. Areas of interest: transportation, strategic mobility, ABC costing, logistics management, public policy analysis, privatization, third-party logistics, international logistics, and international trade. Reassigned to Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4283. E-mail: william.cunningham@afit.af.mil

CURRIE, KAREN W., Lt Col, Associate Dean (AFIT/LA). B.A., English, Duquesne University, 1976; M.A., Diplomacy, University of Kentucky, 1977; M.S. Logistics Management, Air Force Institute of Technology, 1984; Ph.D., Business Analysis (Production/Operations Management), Texas A&M University, 1993. Reassigned to DISAM, 1999.

D'ANGELO, ANTHONY P., Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.B.A., University of Cincinnati, 1953; M.B.A., School of Business, Air Force Institute of Technology, 1960; D.B.A., Indiana University, 1974. Retired, 1999.

GILL, LEROY H., Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., Otterbein College, 1969; M.A., Economics, Ohio State University, 1971; Ph.D., Economics, Ohio State University, 1981. Retired, 1999.

HAUCK, DARYL J., Maj, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Operations Research, U.S. Air Force Academy, 1986; M.S., Systems Management, Air Force Institute of Technology, 1992; Ph.D., Industrial Engineering, Arizona State University, 1997. Reassigned, 1999.

HEMINGER, ALAN R., Associate Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., Philosophy, University of Michigan, 1966; M.S., Educational Psychology, California State University at Hayward, 1978; Ph.D., Management Information Systems, University of Arizona, 1988. Information resource management, computers and group problem-solving, reengineering, long-term access to information. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4797. E-mail: alan.heminger@afit.af.mil

JOHNSON ALAN W., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.S.M.E., Montana State University, 1982; M.S., Systems Management, Air Force Institute of Technology, 1989; Ph.D., Industrial and Systems Engineering (Operations Research), Virginia Polytechnic Institute and State University, 1996. Industrial engineering, modeling, operations research, quantitative analysis, simulation, acquisition management. Reassigned to Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4284. E-mail: alan.johnson@afit.af.mil

KANKEY, RONALD D., Associate Professor and Head, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Mathematics, Wichita State University, 1968; M.S., Mathematics, Oklahoma State University, 1970; M.A., Business (Management Science), Ohio State University, 1985; Ph.D., Business (Management Science), Ohio State University, 1988. Transferred to AFIT/LS, 1998.

L'HEUREUX, RICHARD A., Lt Col, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., University of Minnesota, 1975; M.S., Contracting Management, Air Force Institute of Technology, 1988; Ph.D., Strategic Management, Florida State University, 1994. Retired, 1999.

MOORE, KEVIN R., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.S., Biology Science, University of Massachusetts at Amherst, 1982; M.S., Logistics Management, Air Force Institute of Technology, 1990; Ph.D., Business Administration, Arizona State University, 1996. Reassigned, 1999.

MORRIS, MICHAEL G., Maj, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Bowling Green State University, 1985; M.S., Information Resource Management, Air Force Institute of Technology, 1990; Ph.D., Indiana University, 1996. His research interests include technology acceptance, human-computer interaction, systems analysis and design, and decision-making. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4578. E-mail: michael.morris@afit.af.mil

MUCZYK, JAN P., Professor of Management and Dean, Graduate School of Logistics and Acquisition Management (AFIT/LA). B.S., Management, 1964; M.S., Management, 1967; D.B.A., Organizational Behavior, 1972; all degrees from the University of Maryland. Accepted new position as Dean, College of Commerce and Economics, Sultan Qaboos University, Muscat, Oman, 1999.

PETRILLO, DAVID, Lt Col, Assistant Professor of Contracting and Acquisition Management, Department of Graduate Acquisition Management (AFIT/LAS), B.A., Government and International Relations, University of Notre Dame, 1982; M.S., Contracting Management, Air Force Institute of Technology, 1992; Ph.D., Business Logistics, Pennsylvania State University, 1998. Research interests include strategic purchasing, purchasing of services, best commercial purchasing practices, and integrated supply chain management. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4799. E-mail: david.petrillo@afit.af.mil

REHG, MICHAEL, Maj, Assistant Professor of Management, Department of Graduate Logistics Management (AFIT/LAL). B.S., Wildlife Management, University of Wyoming, 1980; M.S., Logistics Management, Air Force Institute of Technology, 1990; Ph.D., Strategic Management, Indiana University, 1998. Research interests include strategic management, organizational change, whistle blowing, organizational structure, ethics, turnover and retention, regression analysis, aerospace defense industry, and international management. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4711. E-mail: michael.rehg@afit.af.mil

SCOTT, WILLIAM L., Maj, Instructor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Economics, University of Texas, 1970; M.S., Acquisition Logistics, Air Force Institute of Technology, 1990. Reassigned, 1999.

SHANE, GUY S., Associate Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Psychology, Washington and Jefferson College, 1963; M.A., Industrial/Organizational Psychology, The George Washington University, 1970; Ph.D., Psychometric Theory, George Washington University, 1978. Retired, 1999.

SRIVASTAVA, RAJESH, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.Tech.E.E., Indian Institute of Technology, 1977; M.B.A., Business Administration, University of Wisconsin at Whitewater, 1980; Ph.D., Business Administration, Ohio State University, 1986. Accepted new position at HQ AFMC, 1999.

STEEL, ROBERT P., Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Psychology, University of Cincinnati, 1974; Ph.D., Industrial Organizational Psychology, University of Tennessee, 1980. Accepted new position at Wright State University, Fairborn OH, 1999.

STOCKMAN, WILLIAM K., Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Mathematics, Southeast Missouri University, 1977; B.S., Business Administration, Southeast Missouri University, 1977; B.S., Astronautical Engineering, Air Force Institute of Technology, 1984; M.S., Engineering Management, West Coast University, 1986; M.S., Operations Research, Air Force Institute of Technology, 1988; M.A., Economics, George Mason University, 1995; Ph.D., Economics, George Mason University, 1996. Research interests include public choice, source selection evaluation techniques, economic analysis, program evaluation, and general aviation. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4796. E-mail: william.stockman@afit.af.mil

STOHRER, FREDA F., Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Music and French, Jacksonville State University, 1952; M.A., English, University of Tennessee, 1962; Ph.D., English, University of North Carolina, 1977. Retired, 1999.

SWARTZ, STEPHEN M., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). A.A.S., Aviation Maintenance Management, Community College of the Air Force, 1984; A.S., Airport Management, Western Oklahoma State College, 1989; B.P.A., Professional Aeronautics (Aviation Maintenance Management), Embry-Riddle Aeronautical University, 1985; M.A., Human Resources Development, Webster University, 1988; M.S., Logistics Management, Air Force Institute of Technology, 1991; Ph.D., Business Administration, Michigan State University, 1999. Research specialties and interests include aviation maintenance systems management, optimization of production systems, Production management and scheduling, project management and scheduling, dynamic and static modeling, and theory of constraints education. Reassigned to Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4285. E-mail: stephen.swartz@afit.af.mil

THURSTON, PAUL W., Maj, Instructor of Management and Organizational Behavior, Department of Graduate Logistics Management (AFIT/LAL). B.S., Mechanical Engineering, Worcester Polytechnic Institute, 1984; M.S., Systems Management, Air Force Institute of Technology, 1989; Ph.D. Candidate, Organizational Studies, State University of New York, Albany. Major Thurston's research interests include decision-making, organizational justice, motivation, small group performance, performance measurement, mentoring, and experimental design/research methods. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4316. E-mail: paul.thurston@afit.af.mil

VAUGHAN, DAVID K., Professor of Technical Communication and Assistant Dean for Research and Consulting (AFIT/LAC). B.S., Engineering Sciences, U. S. Air Force Academy, 1962; M.A., English, University of Michigan, 1969; Ph.D., English, University of Washington, 1974. Technical communications, education and training, military history and literature, operational cockpit environment, doctrine. Reassigned to Dean's Office, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4557. E-mail: david.vaughan@afit.af.mil

WARD, MARK, Maj, Assistant Professor of Management and Organizational Behavior, Department of Graduate Logistics Management (AFIT/LAL). B.S., Political Science, Texas A&M University, 1986; M.S., Acquisition Logistics Management, Air Force Institute of Technology, 1992; Ph.D., Business Administration (Organizational Studies), Southern Illinois University, 1998. Research interests include organizational structure and design, organizational culture, research methods. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4742. E-mail: mark.ward@afit.af.mil

WARE, NORMAN, Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., Management, University of Maryland, 1969; M.B.A. and D.B.A., Business Administration, Indiana University, 1971 and 1975. Retired, 1999.

4.4 MASTERS THESES BY PROGRAMS

ACQUISITION LOGISTICS

Capt Tonya M. Luther, "Moderating Effects of Station Isolation on Antecedents and Consequences of Fraternization" (AFIT/GAL/LAL/99S-1). Sponsor: USAF/JAG

COST ANALYSIS

Capt Martin Memminger and 1st Lt Jayson M. Wrona, "Implementation of an Activity-Based Costing System in an Air Force Research Laboratory Environment" (AFIT/GCA/LAS/99S-1). Sponsor: AFRL/DEF

Capt Michael J. Nolette and Capt Steven L. Seely, "The Development of Laser Cost Estimating Relationships (CERs) from Commercial Data" (AFIT/GCA/LAS/99S-2). Sponsor: Phillips Laboratory, Kirtland AFB NM

Capt Joseph C. Willoughby and 2nd Lt Michael D. Prater, "The Adequacy of the Fourteen General System Characteristics as Function Point Adjustment Factors" (AFIT/GCA/LAS/99S-3). Sponsor: AFRL/IFSD

CONTRACT MANAGEMENT

Capt Raymond M. Barben, "The Impact of Acquisition Reform and Political-Fiscal Variables on Air Force GAO-Protests Processed" (AFIT/GCM/LAS/99S-1). Sponsor: SAF/AQCX

Capt Louis D. Bryan, "Rethinking the Transition from Initial Cost Estimation to Earned Value Management of the Software Development Process" (AFIT/GCM/LAS/99S-2).

Capt Daniel I. Dunn and 1st Lt Robert D. Lorton, "Professional Contracting Certification: An Examination and Model Development" (AFIT/GCM/LAS/99S-3).

Capt Michael R. Hackman and 1st Lt Jack L. Nemceff III, "Public-Public Partnerships: Development of an Alternative Outsourcing Method Decision Model" (AFIT/GCM/LAS/99S-4). Sponsor: HSC/PK

1st Lt Harry T. Loughran and John S. Webb, "Is Outsourcing a Better Value than Organic Support? A Case Study Comparing Organic vs. Contractor Controlled Depot Level Maintenance of the F-117" (AFIT/GCM/LAS/99S-5). Sponsor: SAF/AQCX

INVENTORY MANAGEMENT

Capt Andrew W. Hunt, "An Examination of the United States Air Service's Logistics Operations" (AFIT/GIM/LAC/99S-1).

1st Lt Kieran F. Keelty, "A Statistical Analysis of the Variability Experienced in DLA Administrative and Production Lead Time" (AFIT/GIM/LAL/99S-2). Sponsor: ACC/XRS

1st Lt Gregory S. Webb, "Pollution Prevention Cost Savings Using Supply Chain Reengineering" (AFIT/GIM/LAL/99s-3). Sponsor: AMC/LGSS

INFORMATION RESOURCE MANAGEMENT

Maj Ricardo F. G. Santos, "A Methodology to Apply Business Process Reengineering within the Brazilian Air Ministry" (AFIT/GIR/LAS/99M-9).

LOGISTICS MANAGEMENT

Maj Jorge Guarnieri, "Maintenance Resources Evaluation Technique" (AFIT/GLM/LAL/99M-1).

Maj Guillermo A. Piuze, "Acquisition Logistics Guidelines for Improving the Argentine Air Force Weapon System Acquisition Process" (AFIT/GLM/LAL/99M-2)

1st Lt Michael P. Allison, "The Effect of Action Workouts on Aircraft Mission Capability Measurements" (AFIT/GLM/LAL/99S-1). Sponsor: ACC/QMIS

Capt Park D. Ashley, "Operational Risk Management and Military Aviation Safety" (AFIT/GLM/LAL/99S-2).

Capt Robert L. Charlesworth, "An Exploratory Analysis of the Responsiveness Capability of the Air Expeditionary Wing (AEW) Concept" (AFIT/GLM/LAL/99S-3). Sponsor: AMC/DOXP

Capt David P. Collette, "Comparison of the Effects of Eight-Hour and Twelve-Hour Shifts on Air Force Aircraft Maintenance Production Levels" (AFIT/GLM/LAL/99S-4). Sponsor: AMC/436th AGS

Capt Timothy W. Gillaspie, "Logistics Factors Affecting Initial Deployed Aircraft Sortie Generation" (AFIT/GLM/LAL/99S-5).

Capt Gregory E. Hutson, "Reparable Inventory Reduction Impacts on Air Force Fighter Aircraft Mission Capability" (AFIT/GLM/LAL/99S-6). Sponsor: AFMC/LG

1st Lt Shawn R. Jones, "Workplace Violence: Exploring the Dangers for Air Force Leadership" (AFIT/GLM/LAL/99S-7).

Capt Peter D. Lommen, "A Methodology for the Analysis and Prediction of Air Force Enlisted Aircraft Maintenance Personnel Retention Rates Using Economic Statistics" (AFIT/GLM/LAL/99S-8). Sponsor: ASC/CC

1st Lt Julio C. Messias, "The Challenge of Maintaining or Replacing an Aging Airlift Fleet: A Cost/Capability Analysis of the Brazilian Air Force Mobility System" (AFIT/GLM/LAL/99S-9).

Capt Lawrence J. Stetz, "An Ex Post Facto Analysis of E-3 Maintenance Indicators in the 552nd Air Control Wing since Reorganization under an Aircraft Generation Squadron Concept" (AFIT/GLM/LAL/99S-10).

TRANSPORTATION MANAGEMENT

Capt Richard H. Fillman, "The Privatization of the Aerospace Guidance and Metrology Center at Newark AFB" (AFIT/GTM/LAL/99S-1).

Capt Jeffrey L. Frye, "A Comparison of Department of Defense and Private Sector Fraternization Policies" (AFIT/GTM/LAC/99S-2). Sponsor: USAF/JAG

1st Lt Michael J. Gravier, "Logistic Regression Modeling of Diminishing Manufacturing Sources for Integrated Circuits" (AFIT/GTM/LAL/99S-3). Sponsor: AFRL/MLMP

Capt Frank J. Long, "Space Available Transportation: An Analysis of the Cost of Providing 'Free' Travel" (AFIT/GTM/LAL/99S-4). Sponsor: AMC/DONP

Capt Robert J. Neal, "Cost/Benefit Analysis of Leasing vs. Buying Air Force General Purpose Vehicles" (AFIT/GTM/LAL/99S-5). Sponsor: USAF/ILTV

ADVANCED STUDIES IN AIR MOBILITY

(Note: The Air Mobility graduate program is designed specifically for personnel of the Air Mobility Command; students in the Air Mobility program write graduate research papers supporting topics of interest to AMC; the results of their papers are not included in the research summaries presented in Section 2 of this report.)

Maj Philip M. Calvano, "Joint Task Force J3/J4: Directorate of Mobility Forces" (AFIT/GMO/LAL/99E-1)

Capt Karn L. Carlson, "Reducing Aircraft Quick-Turn Ground Times in the European Environment" (AFIT/GMO/LAL/99E-2)

Maj Steven D. Dye, "Improving African Fuel Availability in Support of Humanitarian Relief Operations" (AFIT/GMO/LAC/99E-3).

Capt Geoffery M. Gibbs, "Cyberterrorism and Mobility Operations" (AFIT/GMO/LAS/99E-4).

Maj Martin T. Gimbus, "Examining Air Mobility Command Support to the Expeditionary Aerospace Force" (AFIT/GMO/LAL/99E-5).

Maj Jeffrey L. Hupy, "Command and Control of Mobility Forces: Analysis of the Organizational Structure" (AFIT/GMO/LAL/99E-6).

Maj Richard C. Leatherman, "Are Civilian Munitions Carriers Ready for Two Major Theater Wars?" (AFIT/GMO/LAL/99E-7).

Maj Richard P. MacKeen, "Weather Constrained Throughput: Substituting Spangdahlem and Ramstein for Rhein Main" (AFIT/GMO/LAL/99E-8).

Maj Patrick X. Mordente, "The Challenges Facing Tanker Airlift Control Elements (TALCE) in their Preparations for Chemical Warfare" (AFIT/GMO/LAC/99E-9).

Maj Paul R. Murphy, "The Availability of Container Shipping Needed to Meet Wartime Ammunition Sustainment Requirements" (AFIT/GMO/LAL/99E-10).

Maj Christopher B. Patterson, "The Application of Automatic Identification Technology for Intransit Visibility at Remote Locations" (AFIT/GMO/LAL/99E-11).

Maj Timothy H. Robinson, "Near Zero-Zero Precision Approach: Enhanced Vision as a Possible Solution" (AFIT/GMO/LAL/99E-12).

4.5 JOURNAL PUBLICATIONS

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BRANDT, CRAIG M. (LAL)

Brandt, Craig M., and Paul L. Hartman, "International Armaments Cooperation: Can It Fulfill Its Promise?" *Air Force Journal of Logistics* 22.3 (Fall 1998): 10-14.

CUNNINGHAM, WILLIAM A. (LAL)

Cunningham, William A., Travis Condon, and Kirk Patterson, "A Comparison of Air Force Organic Airlift and Commercial Air Express Distribution Performance," *Air Force Journal of Logistics* 23.1 (Spring 1999): 8-12.

*Moore, Kevin R., and William A. Cunningham III, "Social Exchange Behavior in Logistics Relationships: A Shipper Perspective," *International Journal of Physical Distribution and Logistics Management* 29.2 (1999): 103-121.

CURRIE, LT COL KAREN W. (LA)

Currie, Karen W., "Just-in-Time and Just-in-Place: Education and Training for Logistics Professionals," *Logistics Spectrum* 33.2 (Apr-Jun 1999): 23-26.

HAUCK, MAJ DARYL J. (LAS)

Hauck, Daryl J., G. C. Runger, and D. C. Montgomery, "Multivariate Statistical Process Monitoring and Diagnosis with Grouped Regression-Adjusted Variables," *Communication in Statistics: Simulation and Computation* 28.2 (1999): 309-328.

JOHNSON, MAJ ALAN W. (LAL)

Johnson, Alan W., "Simulation: It's the Real Thing," *Air Force Journal of Logistics* 22.4 (1998): 17-20.

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Johnson, Alan W., S. H. Jacobson, K. A. Sullivan, M. A. Fleischer, and A. Kumar, "Metaheuristics for a Flexible Assembly System Design Problem," *Journal of Heuristics* 3.2 (1997): 139-159.

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MORRIS, MAJ MICHAEL G. (LAS)

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Morris, Michael G., H. Adams, and J. Van Scotter, "Examining E-Mail Use in the Context of Virtual Organizations: Implications for Theory and Practice," *International Journal of Electronic Commerce* 3.1 (1998): 8-26.

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SWARTZ, MAJ STEPHEN M. (LAL)

Swartz, Stephen M, David J. Closs, James E. Eckert, Thomas J. Goldsby, and Tony A. Roath. "An Empirical Comparison of Anticipatory and Response-Based Supply Chain Strategies." *International Journal of Logistics Management* 9.2 (1999): 21-34.

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Vaughan, David K., "The Wright Brothers, Birdflight, and the Invention of the Flying Machine," *The Vincent Brothers Review* 7.2 (1999): 71-85.

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CAUDLE, MAJ MARK D. (LAS)

Caudle, Mark D., *Activity-Based Costing Applications with Logistics and their Effect on Logistics Decision Making*. Diss., Ohio State University, 1999.

JOHNSON, MAJ ALAN W. (LAL)

Johnson, Alan W., S. H. Jacobson, and K. A. Sullivan, "Generalized Hill Climbing Algorithms for Discrete Manufacturing Process Design Problems Using Computer Simulation Models," *Proceedings of the Conference on Modeling and Simulation, European Simulation Multiconference*, 473-478.

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Morris, Michael, G., and D. Schmidt, "An Exploratory Analysis of Information Systems and Training for Air Force Officers," *Proceedings of ISECON, Association of Information Technology Professionals*, San Antonio TX, 15 October 1998.

MUCZYK, JAN P. (LA)

Muczyk, Jan P., "Stages of Transition from a Planned to a Free Economy: Poland as a Case." *Global Business Trends: Contemporary Readings*, 1999 Edition. Ed. David L. Moore and Sam Fullerton. Academy of Business Administration, 1999: 15-32.

Muczyk, Jan P., "Poland's Inclusion in NATO: A Form of National Redemption," *Dayton Daily News*, 22 March 1999: 6A.

Muczyk, Jan P. Review of "The Big L: American Logistics in World War II," *Airpower Journal* (Spring 1999): 119.

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Swartz, Stephen M. *The Effects of Variability and Disruption on Project Stability, Duration, and Net Present Value*. Diss., Michigan State University, 1999.

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Vaughan, David K., "Bentham, Kant, and the Technical Professions," *Proceedings of the Conference on Ethics and Technical Education*, Raritan Community College, Somerville NJ, 3 June 1999.

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DuFour, Howard R., Peter J. Unitt, and David K. Vaughan, *Charles Taylor: The Wright Brothers' Mechanician*. DuFour Press, 1998.

Vaughan, David K., "Girl Fliers in a World of Guys: Three 1930s Girls' Juvenile Aviation Series," *Dime Novel Round-up* 68.1 (1999): 16-27.

Vaughan, David K., twelve entries in *War and American Popular Culture: A Historical Encyclopedia*, ed. Paul Holsinger, Jr. Greenwood Press, 1998.

4.7 SUBSTANTIAL CONSULTATIONS

BIROS, MAJ DAVID (LAS)

Biros, David P., Decision-Making for Managers, AF/SCX, June 1999. Contact: Col Dan Goad/Maj Lisa Jacques.

Biros, David P., Communications Education and Training for the Information Career Field, SAF/AQX, 1999.

SWARTZ, MAJ STEPHEN M. (LAL)

Swartz, Stephen M. Air Expeditionary Force Deployment Movement Decision Support, Defense Advanced Project Research Agency (DARPA) Advanced Logistics Project.

VAUGHAN, DAVID K. (LAC)

Vaughan, David K., Project Management Assistance, AFMC/LGI, December 1998. POC: Mr. Mark Fryman.

4.8 PRESENTATIONS

[* Denotes duplicate entry, multiple faculty authors.]

AROSTEGUI, MAJ MARVIN A. (LAL)

Arostegui, Marvin A., S. N. Kadipasaoglu, W. Xiang, and B. M. Khumawala, "Heuristic Applications for the N-Job M-Machine Scheduling Problem," 1998 Annual Meeting of the Decision Sciences Institute, Las Vegas NV, 22 November 1998.

Arostegui, Marvin A., "Reparable Inventory Management," Instituto de Logistica da Aeronautica, Sao Paulo, Brazil, 16-20 November 1998.

Arostegui, Marvin A., "Logistics and Acquisitions Principles in the International Environment," Center for Hemispheric Defense Studies, Fort McNair, Washington DC, 4 February, 23 April, and 16 June 1999.

CUNNINGHAM, WILLIAM A. (LAL)

Cunningham, William A., Karen W. Currie, and Milton Glisson, "Logistics Visions: A Review of Futures Studies," SOLE Mid-Atlantic Log '99, Hampton VA, 25 January, 24 April 1999.

Cunningham, William A., Karen W. Currie, and William L. Scott, "Higher Education in 2025," 1998 Decision Sciences Institute Annual Meeting, Las Vegas NV, 21 November 1998.

*Cunningham, William A., Karen Currie, and Milton Glisson, "The Internet as the Sixth Mode of Transportation," 1999 Intermodal Distribution Educators Association Annual Meeting, Atlanta GA, 22 April 1999.

CURRIE, LT COL KAREN W. (LA)

Currie, Karen W., "Logistics in 2025." AFIT/LS Professional Continuing Education Course LOG 399, WPAFB OH, 1 October, 19 October, and 16 December 1998; 6 April 1999.

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Currie, Karen W., "Logistics Education and Training: While You Work," SOLE Mid-Atlantic Log '99, Hampton VA, 24 April 1999.

Currie, Karen W., "Logistics Resources on the Internet," Council of Logistics Management, Southwest Ohio Logistics Conference, Dayton OH, 19 May 1999.

Currie, Karen W., Richard A. Andrews, and Michael E. Phillips, "Integrated Logistics Support and Information Systems," SOLEUROPE Workshop, Munich, Germany, 21-25 June 1999.

*Currie, Karen W., William A. Cunningham, and William L. Scott, "Higher Education in 2025," 1998 Decision Sciences Institute Annual Meeting, Las Vegas NV, 21 November 1998.

JOHNSON, MAJ ALAN W. (LAL)

Johnson, Alan W., "Simulation for Logisticians," 1998 SOLE Conference, Seattle WA, 24 August 1998.

Johnson, Alan W., "Simulation for Logisticians," WPAFB Logistics Officers Association, ASC/SY, 10 June 1999.

Johnson, Alan W., "Defense Acquisition Management," Center for Hemispheric Defense Studies, Fort McNair, Washington DC, 5 February, 22 April, and 17 June 1999.

SCOTT, MAJ WILLIAM L. (LAL)

*Currie, Karen W., William A. Cunningham, and William L. Scott, "Higher Education in 2025," 1998 Decision Sciences Institute Annual Meeting, Las Vegas NV, 21 November 1998.

VAUGHAN, DAVID K. (LAC)

Vaughan, David K., "Bentham, Kant, and the Technical Professions," Conference on Ethics and Technical Education, Raritan Community College, Somerville NJ, 3 June 1999.

Vaughan, David K., "The Air Show as Ritual Festival," Third Annual Conference on Holidays, Rituals, Festivals, and Public Display, Bowling Green State University, Bowling Green OH, 23 May 1999.

Vaughan, David K., "The War and the WAC: Bernadine Bailey's Youngest WAC Series," Annual Conference of the Popular Culture Association, San Diego CA, 2 April 1999.

Vaughan, David K., and William Schum, "Varieties of Motivation in Vietnam War Narratives," Annual Conference of the Popular Culture Association, San Diego CA, 1 April 1999.

Vaughan, David K., "Engineering Experiences in the Novels of Nevil Shute," Nevil Shute Centennial Conference, Albuquerque NM, 17 January 1999.

Vaughan, David K., "The Challenge of Pilot Training," 1998 Space Symposium, Kiser Middle School, Dayton OH, 24 October 1998.

Vaughan, David K., "Bert Stiles' *Serenade to the Big Bird*: B-17 as Schoolroom," 1998 National Aerospace Conference, Wright State University, 2 October 1998.

Appendix: Abbreviations for Organizations

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing will only include selected organizations. The Air Force Address Directory has a more comprehensive listing of abbreviations for organizations at its web site at <http://afdir.hq.af.mil> , additionally, the Defense Technical Information Center has an acronym listing at <http://www.dtic.mil/dtic/dtic-acronyms.html> . The department symbols for the Graduate School of Engineering are found at Section 3.1 while those of the Graduate School of Logistics and Acquisition Management are depicted in Section 4.1.

ACC	Air Combat Command
AETC	Air Education and Training Command
AFCEE	Air Force Center For Environmental Excellence
AFCESA	Air Force Civil Engineer Support Agency
AFIT	Air Force Institute of Technology
AFMC	Air Force Materiel Command
AFOSR	Air Force Office of Scientific Research
AFOTEC	Air Force Operational Test and Evaluation Center
AFRL	Air Force Research Laboratory
AFSPC	Air Force Space Command
AFTAC	Air Force Technical Applications Center
AIA	Air Intelligence Agency
AMC	Air Mobility Command
ASC	Aeronautical Systems Center
AU	Air University
DISA	Defense Information Systems Agency
DoD	Department of Defense
DOE	Department of Energy
HQ AU	Headquarters, Air University
PACAF	Pacific Air Forces
SAF	Secretary of the Air Force
USAF	United States Air Force

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1. REPORT DATE (DD-MM-YYYY) 01-05-2000		2. REPORT TYPE Summary Report of Annual Research		3. DATES COVERED (From - To) 01-10-1998 to 30-09-1999	
4. TITLE AND SUBTITLE Air Force Institute of Technology Research Report 1999				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Office of the Associate Dean for Research and Consulting, Graduate School of Engineering, and the Assistant Dean of Research and Consulting, Graduate School of Logistics and Acquisition Management				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S) Air Force Institute of Technology Graduate School of Engineering and Management (AFIT/ENR) 2950 P Street, Building 640 WPAFB OH 45433-7765				8. PERFORMING ORGANIZATION REPORT NUMBER AFIT/EN-TR-00-1	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Air Force Institute of Technology (AFIT/ENR) 2950 P Street, Bldg 640 Wright-Patterson AFB, Ohio 45433-7765				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.					
13. SUPPLEMENTARY NOTES The views expressed in this report are those of the authors and do not reflect the official policy or position of the Department of Defense or the U.S. Government.					
14. ABSTRACT This report summarizes the research activities of the Air Force Institute of Technology's Graduate School of Engineering and Graduate School of Logistics and Acquisition Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions; and outlines the procedures for contacting either school. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Engineering Physics and Logistics and Acquisition Management.					
15. SUBJECT TERMS Air Force Institute of Technology, Research Report 1999					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (Include area code)
U	U	U	UL	145	Dr. Heidi R. Ries, ENR Commercial: (937) 255-3633 or DSN: 785-3633